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EMPIRICALLY DETERMINED GRADE NORMS AS A FACTOR IN THE EDUCATIONAL MALADJUSTMENT OF THE "AVERAGE" CHILD

Part II. The Age-Grade Status of Children in the 90-109 I.Q. Group

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INTRODUCTION

THE question has been raised[1] as to whether present grade achievement norms are not unfair to the child of average mental ability. The argument advanced is that if norms for a given grade are based on the performance of all pupils in that grade, as is the present practice, then the "average" child who enters school within the first six months allowed by law is handicapped, not only in the first grade, but increasingly so as he advances through the grades.

One way to investigate the validity of this view is to make an age-grade study of children in the 90-109 I.Q. group. If it be found that the progress records of a group of "average" children result in an age-grade distribution that shows a large and increasing proportion of over-age pupils, then there is grounds for saying that the achievement norms are too difficult, and consequently the assumption that the "average" child should, under present conditions, make a grade a year is untenable.

"Age for grade" a discrete measure, not an over-lapping one.—The pivotal point in this study is that "normal age for grade"[2] is limited to a

[1] Horn, Ellen Alice, and Main, Zilpha. "Empirically Determined Grade Norms as a Factor in the Educational Maladjustment of the "Average" Child. Part I. A Critical Evaluation of Actual Grade Placements of Children in the 90-109 I.Q. Group," *Journal of Educational Research*, XXXI (October, 1937), pp. 81-89.

[2] Ayer says, "Lack of agreement as to what constitutes normal age for a given grade has been the chief cause of unreliability among the thousands of reports on the relative percentages of over-age normal, and under-age pupils." Ayer, Fred C. "School Progress," Chapter II in Pupil Personnel, Guidance, and Counseling, *Review of Educational Research*, III (June, 1933), p. 195.

span of six months for each term of school. Positive arguments in support of this shorter length of step have already been given,[3] but the strength of the choice will become increasingly apparent if the use of the more customary overlapping age span is first critically analyzed. Three weaknesses deserve careful attention. First, as the users of the overlapping age span themselves have pointed out, it is not an exact measure; second, its acceptance was largely a matter of traditional usage and authority; and third, its logic is based on a confusion as to the ends it should serve.

The lack of exactness inherent in the overlapping age method was pointed out by Ayres, even when he advocated it. "In the application of the age standard there is a certain generosity in the accepted measure. If we do not consider a child in the first grade as above normal until after the age of eight, we must recognize that for those who enter the first grade early—say exactly at six—we have already a margin which permits a child to spend two years in the first grade without coming in the retarded class."[4] The defense following this statement is interesting: "That this margin is justified appears from the record of frequent failure and absence in the first primary grade."[5] The inexactness of measurement that characterizes the use of overlapping ages is succinctly stated in a criticism of the two-year[6] span by Lurton. "Its effect is to conceal one year's retardation for each and every child during his progress through the grades, provided he entered at six years . . . It is clear, then that by the method Mr. Ayres used it is possible for every child in an entire school system to be retarded one year and yet for the system to appear absolutely free from retarded pupils."[7]

Since the weakness of the overlapping age span was fully recognized, one wonders how it came to be so generally accepted. From examining the later studies it appears that most of them make no explanatory comment; or include a note like this, "These norms have been used in a number of comparable studies."[8] Turning then to Ayres as an early authority, we

[3] Horn, Ellen Alice, and Main, Zilpha. *Op. cit.*

[4] Ayres, Leonard P. *Laggards in Our Schools.* (New York, Charities Publication Committee, Russell Sage Foundation, 1909), p. 42.

[5] Ayres, Leonard P. *Ibid.*

[6] Where the twice-a-year promotion policy was adopted, the use of the one-year overlapping span was adopted, but the grounds for criticism were merely lessened, not eliminated.

[7] Lurton, Freeman E. "Retardation Statistics from the Smaller Minnesota Towns," *Psychological Clinic,* V (March, 1911), p. 14.

[8] Blose, D. T., and Covert, T. *An Age-Grade Study of 7,632 Elementary Pupils in 45 Consolidated Schools, Pamphlet No. 8 (Washington: Office of Education, Department of the Interior, 1930), p. 3.*

again find 'usage' the stated explanation. "These ages have been accepted by common consent as the 'normal ages' for these grades by nearly all the schoolmen who have interested themselves in the problem."[9] Since the first age-grade report is accredited[10] to Superintendent Maxwell, we read with interest and then disappointment this statement by him: "For a proper understanding of the facts, it is necessary to bear in mind that the normal ages of children in the several grades, if they enter at six years or six years and a half, and are not retarded during their course, are as follows: First year grades . . . 6 to 8 years, 2d year grades . . . 7 to 9 years," and so on.[11] Fortunately, a note by the editors of this volume is more informing:

> In 1904, Dr. Maxwell returned 'in his Greater New York Report, to the plan he had followed in Brooklyn from 1887-1898' of reporting the ages of pupils. *He made the important addition, however, of fixing the limits of normal age for each grade,* so as to determine the proportion of over age pupils in the grades. *These limits have been adopted with practical uniformity throughout the U. S. . . .* [12] (Italics ours)

It seems to be the unavoidable conclusion that the practice of employing overlapping ages rests largely on traditional usage.

It cannot be said, however, that tradition entirely accounts for the wide acceptance of a measure that was recognized as inexact. The following quotation is probably expressive of the reasoning that lies back of the use of the overlapping age span. "The Compulsory Education Law does not compel a child to go to school until he is seven years old, but a pupil may enter grade 1A at the age of six. The present standard of six to seven years for the entering grade 1A would seem, therefore, to be justified."[13] The guiding principle in this viewpoint seems to be that no child who entered school within the age limit set by the compulsory education law should be regarded as other than in the "at age" group. According to this logic, the double promotion period as normal age for grade became a necessity.

[9] Ayres, Leonard P. *Op. cit.*, p. 38.

[10] Odell, Charles W. *The Progress and Elimination of School Children in Illinois,* Bureau of Educational Research Bulletin, No. 19 (Urbana: University of Illinois, 1924), p. 2.

[11] Maxwell, William H. *A Quarter of a Century of Public School Development* (New York: The American Book Company, 1912), p. 148.

[12] Maxwell, William H. *Ibid.*

[13] Campbell, Harold G. Thirty-sixth Annual Report of the Superintendent of Schools, Part II (City of New York: Board of Education, 1933-34), p. 98.

Further, the use of the overlapping age span was not without its supposed advantage. By adopting an age span that included all pupils who entered school within the compulsory age limit, it became practically certain that all those who were older than these ages for grade had made slow progress, for of course practically none entered later than the compulsory age limit. So though the "at age" group included a wide margin of cases which might have had a failure, at least those that it marked off as over age could be considered as retarded, that is, as having made slow progress. In this way and to this extent the system of overlapping ages may be said to depict both progress and age-grade status in one measure. Actually, it measured neither accurately, and in addition, it greatly obscured the issue.

The question to be answered by an age-grade study is not what progress children are making, but merely what is the age composition of the grades. If this primary purpose of the age-grade study had been kept in mind, it seems hardly likely that the overlapping age span would have come into wide usage. If the aim of an inquiry is to depict the age composition of the grades, then consecutive, discrete age steps are called for, and to use overlapping ages obviously defeats the purpose of the study. It is true that the child, who enters school just within the compulsory age limit and is promoted every term, makes "normal" *progress*, that is, a grade a year; but in respect to the children, who enter school as soon as the entrance law permits and who also make "normal" progress, he is at all times *over-age* for grade. It appears, then, that the logic of the overlapping age span is unsound. It is based on a confusion as to the ends to be served by an age-grade study.

This matter of overlapping ages has been criticized in detail in this article, not only because our age-grade table is based on a discrete age span for each grade, but also, and even more so, because acceptance of the principle of *non*-overlapping ages is essential to our thesis that term achievement norms should be based only upon the performance of pupils who enter school within the first six months of age allowed by entrance laws. Furthermore, norms so based should also be determined by the performance of children of average mental ability, in order that we may be sure that "average" children may make a grade a year.

COLLECTION AND TREATMENT OF DATA

In the present study it has been necessary to modify the regular procedure in an age-grade study, in order that it could be determined with

certainty that the increasing proportion of those "over age for grade" was actually due to retardation. Hence, the original data are progress records. These have been put into an age-grade table for the reason that a clear picture is thus obtained, both of the proportion of "average" children who enter later than the first six months allowed by law, and of the grade-to-grade increases of various amounts of retardation.

The data for this study are based on a total of 866 pupils consisting of the following groups: 414 at the 90-109 I.Q. level who are now in junior high schools; 452 who are now in the 4th, 5th, and 6th grades, 241 of these being at the 90-109 I.Q. level and 211 having I.Q.'s of 110 or higher. The 414 pupils for whom we have progress data for six complete grades are regarded as the major study group, the other two groups being used as checks and for comparison.

The intelligence quotient used for each child was his modal one, most pupils having been given three to five tests. In the junior high school group no cases were used with less than two quotients and these only when they represented scores on later-than-primary tests; in the elementary group a few cases were included that had only one quotient, provided that that one was on one of the late tests. The tests included were the Detroit First Grade, Pintner-Cunningham, Otis Primary, Haggerty-Detroit, Kuhlmann-Anderson, Detroit Primary, Stanford-Binet, National, Otis Intermediate, and Terman. The I.Q. distribution in the major group shows some selection at the lower end, as special care was taken not to include any cases that might be lower than 90 I.Q.

The data for the major group includes all cases having complete data and being in the 90-109 I.Q. group in two large junior high schools of good neighborhood and 25 cases from a junior high school whose enrollment was about half Mexican. A check on these data showed no racial effect and they were therefore included in the study. The elementary school data were drawn from four schools, which were also in average, or slightly above average neighborhoods. Hollerith equipment greatly facilitated the combining of these cases into an age-grade table. The data do not, of course, represent the condition in any one school nor at any one time, being, rather, data on the same children throughout. In computing normal age for grade the six months span of 5 years, 9 months through 6 years, 2 months was used for those entering in the spring term, while for those entering in the fall the ages 5 years, 10 months through 6 years, 3 months was used.[14]

[14] Horn, Ellen Alice, and Main, Zilpha, op. cit. (See footnote 11).

RESULTS

Age on first entering B1.—Information on the entrance age of "average" children has more than a theoretical relation to our problem. Since more than 50 percent enter school within the first six months allowed by law, then on the mere basis of numbers the norms should be designed for these pupils.[15] The average entrance age for the total 866 pupils was 72.8 months; that for the 423 boys was 72.9 months while the av-

TABLE I

AGE-GRADE DISTRIBUTION OF PROGRESS DATA FOR 199 GIRLS

At Entrance to	Under Age 1 Term		Normal Age		Over Age					
					1 Term		2 Terms		3 Terms	
	No.	%	No.	%	No.	%	No.	%	No	%
Spring Entrance to B1, N = 76										
B1	2	2.6	67	88.2	5	6.6	2	2.6		
A1	1	1.3	53	69.7	19	25.0	3	4.0		
B2	1	1.3	49	64.5	23	30.2	3	4.0		
A2	1	1.3	46	60.5	24	31.6	3	4.0	2	2.6
B3	1	1.3	44	57.9	26	34.2	3	4.0	2	2.6
A3	1	1.3	41	53.9	29	38.2	3	4.0	2	2.6
B4	1	1.3	43	56.6	27	35.5	3	4.0	2	2.6
A4	1	1.3	38	50.0	32	42.1	3	4.0	2	2.6
B5	1	1.3	37	48.7	29	38.2	7	9.2	2	2.6
A5	1	1.3	35	46.0	31	40.8	5	6.6	4	5.3
B6	1	1.3	34	44.7	32	42.1	5	6.6	4	5.3
A6	1	1.3	33	43.4	32	42.1	6	7.9	4	5.3
B7	1	1.3	33	43.4	32	42.1	6	7.9	4	5.3
Fall Entrance to B1, N = 123										
B1	6	4.9	89	72.4	26	21.1	2	1.6		
A1	4	3.3	78	63.4	38	30.9	3	2.4		
B2	4	3.3	72	58.5	41	33.3	6	4.9		
A2	4	3.3	66	53.6	44	35.8	9	7.3		
									Age	
B3	4	3.3	62	50.4	46	37.4	11	8.9		
A3	4	3.3	58	47.1	47	38.2	13	10.6	1	.8
B4	4	3.3	57	46.3	46	37.4	15	12.2	1	.8
A4	4	3.3	55	44.7	46	37.4	15	12.2	3	2.4
B5	4	3.3	52	42.2	46	37.4	15	12.2	6	4.9
A5	4	3.3	49	39.8	47	38.2	17	13.8	6	4.9
B6	4	3.3	47	38.2	47	38.2	17	13.8	8	6.5
A6	4	3.3	45	36.6	47	38.2	18	14.6	9	7.3
B7	4	3.3	44	35.8	48	39.0	18	14.6	9	7.3

[15] Compare Horn and Main op. cit. p. 86.

erage for the 443 girls was 72.7 months. The median entrance age for all cases was 73.0 months. Computed on the basis of spring and fall entrance, the median age for the 332 pupils entering in the spring term was 72.1 months, and for the 534 pupils entering in the fall term 73.7 months. Normal age for grade, as computed in this study, i.e., on the basis of the first six months allowed by law, was found to include 88.6 percent of those entering in the spring term and 74.5 percent of those entering in the fall term. Those under age for grade represented 4.5 percent in the spring term and 6.9 percent in the fall term, while the percentages of those over age for grade were 6.9 and 18.6 respectively, the latter difference appar-

TABLE II

AGE-GRADE DISTRIBUTION OF PROGRESS DATA FOR 215 BOYS

At Entrance to	Under Age		Normal Age		Over Age							
	1 Term				1 Term		2 Terms		3 Terms		4 Terms	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Spring Entrance to B1, N = 88												
B1	7	8.0	75	85.2	4	4.5	1	1.1	1	1.1		
A1	4	4.5	63	71.6	17	19.3	2	2.3	2	2.3		
B2	2	2.3	52	59.1	26	29.5	7	8.0	1	1.1		
A2	2	2.3	43	48.9	29	32.9	13	14.8	1	1.1		
B3	2	2.3	40	45.5	27	30.7	17	19.3	2	2.3		
A3	2	2.3	36	40.9	31	35.2	15	17.0	4	4.5		
B4	2	2.3	35	39.8	30	34.1	16	18.2	4	4.5	1	1.1
A4	2	2.3	33	37.5	27	30.7	21	23.9	4	4.5	1	1.1
B5	2	2.3	32	36.4	30	34.1	17	19.3	6	6.8	1	1.1
A5	2	2.3	31	35.2	31	35.2	16	18.2	7	8.0	1	1.1
B6	1	1.1	31	35.2	31	35.2	18	20.5	6	6.8	1	1.1
A6	1	1.1	31	35.2	30	34.1	17	19.3	8	9.1	1	1.1
B7	1	1.1	28	31.8	31	35.2	19	21.6	8	9.1	1	1.1
Fall Entrance to B1, N = 127												
B1	3	2.4	89	70.1	31	24.4	4	3.1				
A1	2	1.6	74	58.3	39	30.7	12	9.4				
B2	3	2.4	62	48.8	46	36.2	14	11.0	2	1.6		
A2	2	1.6	51	40.2	50	39.4	21	16.5	3	2.4		
B3	2	1.6	46	36.2	52	40.9	22	17.3	4	3.1	1	.8
A3	2	1.6	43	33.9	53	41.7	19	15.0	10	7.9		
B4	2	1.6	43	33.9	51	40.2	21	16.5	10	7.9		
A4	2	1.6	41	32.3	51	40.2	21	16.5	12	9.4		
B5	2	1.6	43	33.9	47	37.0	21	16.5	13	10.2	1	.8
A5	2	1.6	38	29.9	48	37.8	22	17.3	13	10.2	4	3.1
B6	2	1.6	36	28.3	47	37.0	24	18.9	14	11.0	4	3.1
A6	2	1.6	36	28.3	48	37.8	23	18.1	13	10.2	5	3.9
B7	2	1.6	34	26.8	50	39.4	24	18.9	13	10.2	4	3.1

ently being due to a preference for fall entrance. From these data it appears that the significance of the factor of late entrance has been considerably over-estimated.

Comparing the pupils having intelligence quotients of 90-109 with those having quotients above 109, we find that of the average ability group 6.0 percent were under age, 77.4 percent normal age, and 14.1 percent over age for grade; while of the higher ability group 6.7 percent were under age, 87.1 percent normal age, and 6.2 percent over age for grade. The spring-fall difference is approximately the same for both groups. In terms of averages the 90-99 I.Q. group entered at the age of 73.4 months, the 100-109 I.Q. group at 72.7 months, the 110-119 I.Q. group at 72.1 months, and the 120 I.Q. group at 72.2 months.

AGE-GRADE INDICES

Average ability group—data for six grades.—Since the data in Tables I and II are of the same pupils in each grade, these indices give age-grade status and also indicate progress, a result not obtained with the usual age-grade table. The figures show that though a large percentage of pupils enter B1 as soon as they are allowed to by law, yet only a relatively small proportion remain at normal age for grade by the time they have completed the work of the six grades. Each term sees the proportion of pupils who are of normal age for grade decreasing while the proportions of pupils who are one and two terms over age increase. At the same time still other "average" pupils become three and four terms over age. (Chart I). The girls (Table I) fare somewhat better than the boys, yet only half of those who started out at normal age for grade finished that way. Of the boys (Table II) only about three-eighths who entered B1 at normal age for grade also entered B7 at normal age for grade. Only four boys in the spring entrance group were in the one term over-age group at entrance, yet 31 were in this group by the end of the 6th grade; similarly there was one who entered B1 two terms over age for grade and 19 who entered B7 that much retarded.

Later average ability group—data for grades B1-B4.—Since the data for the above group were for those who are now in junior high schools, it was thought that data secured on groups entering later might show a different picture. The data from those still enrolled in elementary grades are given in Table III. While both groups start out with 77 percent at normal age for grade, by the end of the B4 grade the group entering

later had only 36 percent remaining in the normal group, while the group now in junior high had 40 percent.

Comparison of average ability group with higher ability group.—The case of pupils above 109 I.Q. is quite different. Whereas those at normal age for grade in the average ability group dropped from 77 percent of the total at entrance to 36 percent of the total by the end of the B4 grade, those in the higher ability group dropped from 87 percent only to 76 percent of the total. (Table IV).

SUMMARY AND CONCLUSIONS

An investigation into the practice of using overlapping ages fails to

TABLE III

AGE-GRADE DISTRIBUTION FOR 241 PUPILS* WHO ARE OF AVERAGE ABILITY AND WHO ARE NOW IN GRADES 4, 5, AND 6

At Entrance	Under Age				Normal Age		Over Age									
	2 Terms		1 Term				1 Term		2 Terms		3 Terms		4 Terms		5 Terms	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
B1, Entr.	2	.8	19	7.9	187	77.6	25	10.4	7	2.9	1	.4				
B1, End of			14	5.8	131	54.4	79	32.8	16	6.6	1	.4				
A1			8	3.3	125	51.9	82	34.0	24	10.0	2	.8				
B2			6	2.5	118	49.0	80	33.2	32	13.3	5	2.1				
A2			5	2.1	109	45.2	84	34.9	35	14.5	8	3.3				
B3			5	2.1	101	41.9	88	36.5	36	14.9	9	3.7	2	.8		
A3			5	2.1	94	39.0	85	35.3	44	18.3	10	4.1	3	1.2		
B4			5	2.1	87	36.1	87	36.1	45	18.7	13	5.4	3	1.2	1	.4

*Spring and fall entrance groups combined.

TABLE IV

AGE-GRADE DISTRIBUTION OF 211 PUPILS* WHOSE INTELLIGENCE QUOTIENTS ARE 110 OR HIGHER AND WHO ARE NOW IN GRADES 4, 5, AND 6**

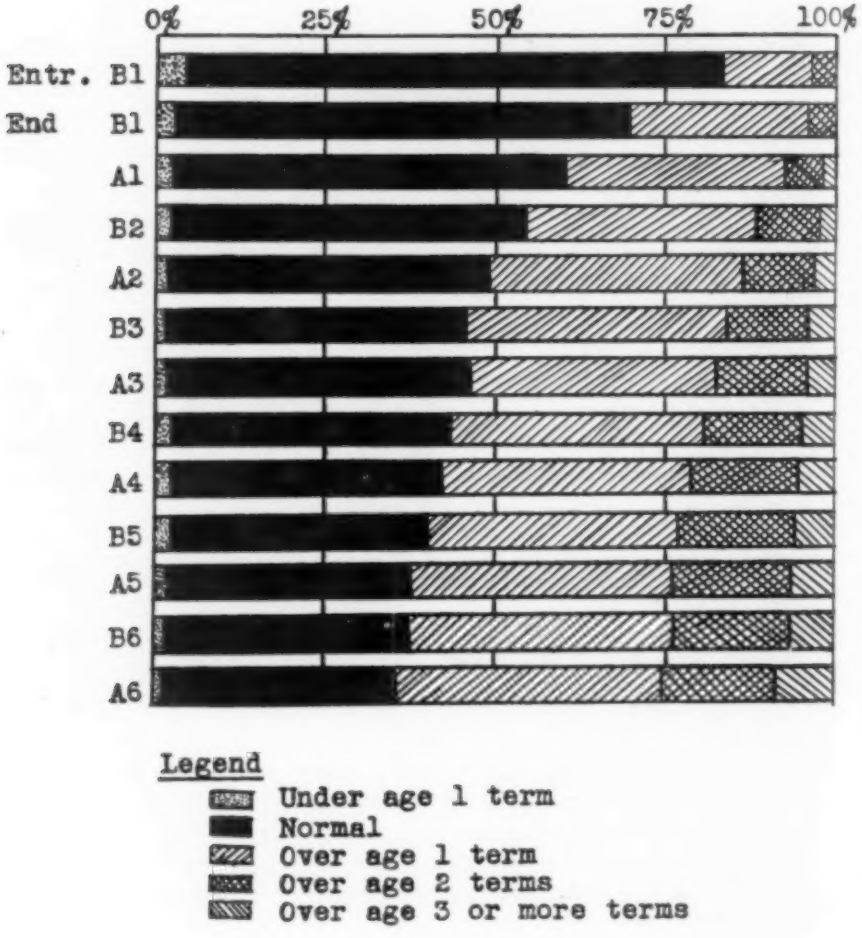
At Entrance to	Under Age				Normal Age		Over Age			
	2 Terms		1 Term				1 Term		2 Terms	
	No.	%	No.	%	No.	%	No.	%	No.	%
B1, Entr.	1	.5	13	6.2	184	87.2	13	6.2		
B1, End of	1	.5	12	5.7	173	82.0	25	11.8		
A1	1	.5	12	5.7	170	80.6	25	11.8	3	1.4
B2			12	5.7	168	79.6	28	13.3	3	1.4
A2			12	5.7	165	78.2	30	14.2	4	1.9
B3			10	4.7	166	78.7	30	14.2	5	2.4
A3			10	4.7	163	77.3	33	15.6	5	2.4
B4			9	4.3	160	75.8	37	17.5	5	2.4

*Spring and fall entrance groups combined.
**Includes 29 cases graduated in January, 1936.

reveal any adequate grounds for the use of an age span for grade that is longer than a grade, or that begins later than the earliest entry age allowed by law. The present study, based on such an age span, shows that though a large proportion of children in the 90-109 I.Q. group enter school as early as they may and so constitute a large at-age group at the

CHART I

AGE-GRADE DISTRIBUTION OF 414 PUPILS IN THE 90-109 I.Q. GROUP WHOSE RECORDS WERE COMPLETE FOR THE SIX GRADES



beginning, yet each successive grade shows a steadily decreasing proportion of at-age pupils and a similarly increasing proportion of pupils who are one, two, three, and even four terms over age. Yet all of these children were of average mental ability and should have completed the work of the six elementary grades on scheduled time. The principal explanation appears to be that the achievement norms for the grades were too high. This contention is further supported by the very different age-grade status of the group of above-average children. The conclusion seems obvious that achievement norms should not be based on the ability of a grade as at present composed, but should be designed to permit the "average" child who enters at legal age to continue through the grades without failure.

A READING VOCABULARY FOR THE FOURTH GRADE

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INVESTIGATORS have been at work for many years trying to determine what words should constitute the child's vocabulary for various purposes and at various age levels. School men have long deemed it necessary in the field of reading to have available a good word list which indicates to a reasonable degree those words which the child should be expected to know at each grade level of reading. Horn prepared a first grade list as the beginning of graded word lists.[1] Gates then presented his word list for the primary grades.[2] No higher grade lists were prepared until Dolch and Buckingham became interested in conducting their *Combined Word Studies* subsidized by one of the larger publishing houses.[3] This study proved to be the most extensive investigation ever attempted. It combined ten of the larger word studies previously reported by other investigators and a new Free Association Study into a composite list. The chief limitation of this list is that it is not definitely graded. There are many contradictions in the placement of most of the words, some varying as much as four grades at elementary level. The present list tends to complicate rather than simplify the problem of vocabularies.

Thorndike presented a word list consisting of some twenty thousand words based on counts of approximately nine and one half million words derived from literature for children, the Bible and English classics, textbooks, books on various industries, newspapers and magazines, correspondence, and the *Encyclopedia Britannica*.[4] This list is of great value for many purposes, but it has three major limitations which prevent its satisfactory use in reading. First, the list is derived to a great extent from adult material. The words thus obtained would not necessarily be representative of children's reading material. Second, the Thorndike list is based on word-forms taking no account of the several meanings of some words. For example, *note* may refer to a letter, a musical sound, a

[1] Horn, Ernest. "The Commonest Words in the Spoken Vocabulary of Children Up to and Including Six Years of Age," Report of the National Committee on Reading, *Twenty-fourth Yearbook of the National Society for the Study of Education*, Part I (1925), pp. 186-198.

[2] Gates, A. I. *A Reading Vocabulary for the Primary Grades*, New York: Teachers College, Columbia University, 1926.

[3] Buckingham, B. R., and Dolch, E. W. *A Combined Word List*. Chicago: Ginn and Co., 1936.

[4] Thorndike, E. L. *A Teacher's Work Book of 20,000 Words*, New York: Teachers College, Columbia University, 1932.

notice, etc. Though knowledge of word-forms is essential in reading, clear comprehension is attained through word-meaning. Third, the Thorndike list is not graded to show at what grade level in school the word should be taught. The words are arranged only by frequency of appearance in the source material. This does not give the teacher or author of children's reading material sufficient information about the range of vocabulary for any given grade to include or exclude a great many words of questionable placement.

Horn's list of the 10,000 words most commonly used in writing is based on over five million running words used in correspondence.[5] This list also has limitations which prevent its satisfactory use in reading. First, the words in the list represent word-knowledge necessary for *writing*. It is generally conceded that children have a much larger reading vocabulary than they do writing. It was, therefore, felt that the list did not represent the breadth of material which children are accustomed to read. Second, the list is based almost entirely on adult material. Third, the list is not graded.

An attempt was made by Dale to grade the Thorndike list by ascertaining the familiarity of the words to pupils in fourth, sixth and eighth grades.[6] This is a step in the right direction, but the list still has the other two limitations of the Thorndike list.

Since the grading of the Thorndike or Horn lists would not fill adequately the requirements of a good reading vocabulary, and the Gates list terminated at the third grade, the writer decided to develop a new list of words that would be representative of the vocabulary for the fourth grade and in this way help extend the graded reading vocabulary upward by one more grade.

The writer has been engaged for the past seven years in teaching mentally retarded children and has found it necessary to write a considerable amount of reading material for remedial readers of third and fourth grade reading ability. In so doing he found it very helpful to have a vocabulary list for the grade for which he was writing as a guide to insure his material coming within the comprehension of those children.

Much material was written for third grade level using the Gates primary list as a guide. The work progressed satisfactorily until an attempt

[5] Horn, Ernest. *A Basic Writing Vocabulary.* University of Iowa Monograph in Education, First series No. 4, April, 1926.

[6] Dale, Edgar. *Familiarity of 8000 Common Words to Pupils in the Fourth, Sixth and Eighth Grades.* Unpublished study of the Bureau of Educational Research, Ohio State University.

was made to write at fourth grade level. An effort was made to secure a vocabulary list that contained the fourth grade words. There being none reported, the writer decided to develop one to meet the need. It was hoped that the words so obtained would be of some value to other teachers of fourth grade children and authors of reading material for that grade.

In developing the new fourth grade list it was decided to include in the list any words contained in the Gates primary list and not found in the new study, thereby making the list an extension of the Gates list.

Gates' list is the result of a study to determine what words children in the primary grades should learn to read and when they should learn them.[7] The list contains some fifteen hundred words based on Thorndike's commonest twenty-five hundred, Moor's count of children's literature,[8] Packer's vocabulary of ten first grade readers,[9] and Horn's commonest words in the spoken vocabulary of children up to and including six years of age.[10] The words obtained from this investigation were then appraised for utility, interest, and difficulty in reading in the three primary grades.[11]

METHOD OF SELECTING WORDS

It was decided for the purpose of this study to analyze the words contained in selected books for children of the fourth grade. These books were to represent high standard of quality, wide usage in schools, suitability for fourth grade reading, and high interest to children. The words contained in these sources were to be listed according to frequency of occurrence. Account was to be taken of word-meaning by listing each word, the meaning of which was not obvious, according to its meaning and part of speech. It was to be assumed that a root word and its derived forms were not one and the same word, but were all different words.

CRITERIA FOR SELECTING THE BOOKS

In order that representative fourth grade books be used for the study it was decided to use six basal readers of which one was to be selected for

[7] Gates, A. I., *op. cit.*

[8] An unpublished study supervised by Annie Moor of Teachers College, Columbia University.

[9] Packer, P. F. "The Vocabularies of Ten First Readers," Report of the Society's Committee on Silent Reading. *Twentieth Yearbook of the National Society for the Study of Education,* Part II (1921), pp. 127-244.

[10] Horn, Ernest. *op. cit.*, pp. 186-198.

[11] Gates, A. I. "Construction of a Reading Vocabulary," *Teachers College Record* XXVII (March, 1926), pp. 632-633.

its literary merit and the other five were to be among the most widely used in fourth grade throughout the country. Five supplementary readers of fiction type that were well liked by children of fourth grade and were placed within the fourth grade in reading difficulty according to Washburne's *The Right Book for the Right Child* were to be selected.[12] Four more books were to be drawn from the field of social science. These were to be of historical, geographical, or sociological importance; well liked by fourth grade children, and of fourth grade reading difficulty. One book on arithmetic was to be chosen on the basis of wide usage in fourth grades. It was felt that these sources should indicate to a high degree the vocabulary required for fourth grade reading.

METHOD OF SELECTING THE BOOKS

The basal reader selected for its literary value was chosen after studying Simpson's investigation of basal readers[13] and Bobbs-Merrill's comparison of basal readers.[14] On the basis of these two investigations the *Bobbs-Merrill Fourth Reader* was chosen for this study as the best in literary value of all fourth readers.

In order to ascertain the most widely used basal readers two of the larger publishing houses were asked to name their chief competitors in the fourth grade basal field. Both houses sent a list. The two lists were then compared and the five books appearing on both lists were selected as widely used throughout the country.

The five supplementary readers of fiction type and four social science readers were obtained by selecting thirty-four titles from Washburne's *The Right Book for the Right Child* for fourth grade reading and submitting these titles to twenty-four teachers of children with fourth grade reading ability in the Winnetka public schools. These teachers consulted the children's reading reports which indicate how well the children liked the books and their degree of difficulty,[15] and indicated on the list after each title the number of children liking the book well. (One of the best books I have ever read.) From these lists were selected the books receiving the highest number of votes.

[12] Washburne, C. W. *The Right Book for the Right Child* (New York: John Day Company, 1933) pp. 35-51.

[13] Simpson, Mable E. "An Analytical Study of Basal Reading Texts for the Elementary School," *Journal of Educational Method*, VII (June, 1928), pp. 400-411.

[14] *Comparison of Basal Readers.* Indianapolis, Indiana: Bobbs-Merrill Co.

[15] Washburne, Carleton W. *Reading Report*, Winnetka, Illinois: Winnetka Public Schools.

The arithmetic book was selected in the same manner as the five basal readers. Two large publishing houses were asked to name their chief competitors in fourth grade arithmetic books. From this inquiry the *Standard Service Arithmetic* by Knight, Studebaker and Rueh was selected.

The complete list of books used in the investigation follow:

Basal readers
- *Bobbs-Merrill Fourth Reader*, Baker and Baker
- *Child Story Reader*, Freeman and Johnson
- *Elson-Gray Basic Reader*, Elson and Gray
- *Magic Hours*, Gates and Ayer
- *New Trails*, Rowland

Fiction
- *Chi-wee*, Moon
- *Peppi the Duck*, Wells
- *Prince and Rover at Cloverfield Farm*, Orton
- *The House at Pooh Corner*, Milne
- *The Story of Mrs. Tubbs*, Lofting

Social Science
- *American History for Little Folks*, Blaisdell
- *Early Cave Man*, Dopp
- *Pilgrim Stories*, Humphery
- *The Foods We Eat*, Carpenter

Arithmetic
- *Standard Service Arithmetic*, Knight, Studebaker and Rueh

RULES FOLLOWED IN THE WORD ANALYSIS

1. All words were counted including nonsense words and proper nouns.
2. Hyphenated words were counted as one word.
3. Every form of a word was listed as a separate word. The addition of *s, ies, ly, er, r, est, d, ed, ing,* and *n* to any root word caused those words to be listed as separate words.
4. Different entries were made for any change in spelling of root words as *aeroplane* and *airplane.*
5. Homographs like bill (a beak) and bill (a statement) were listed as separate words with the meaning indicated.
6. Contractions and possessives were listed as separate words.
7. Each word was listed according to its meaning by part of speech where its meaning was not obvious.
8. To the final list were added 150 words contained in the Gates primary list, but not found in this analysis. These words were given a frequency of "G." (Gates)

METHOD EMPLOYED IN THE WORD ANALYSIS

An attempt was made to develop a sampling method of word analysis to save time and money. *The Bobbs-Merrill Fourth Reader* was used to test the sampling method for validity. A complete word count was made listing every word the child was expected to read. Various samplings were then tried and compared with the complete word count to determine what relationship, if any, existed. There was a tendency toward a constant relationship found with the words of high frequency, but with words of average and low frequency there was very little relationship.

As a result of this finding no further attempt was made to sample the remaining material. It was felt that though a complete analysis of the other books would be desirable, the cost would be prohibitive. It was decided to analyze every fifth line of each book and use the results without treatment to increase the number of words. A frequency tabulation was then made of the words encountered by this method. From this tabulation the final list was made.

HOW THE FINAL LIST WAS SELECTED

The words selected for the final list were chosen on the basis of frequency of occurrence in the analysis. With the exception of proper nouns, all words which had a frequency of four or over and appeared in at least two sources were selected. Proper nouns were treated differently due to the fact that these words have a tendency to be peculiar to certain books and authors only. Though "Pegasus" appeared with a frequency of 43 in the study, it was used by only one author in only one book. Unless Hawthorne's *The Winged Horse* was used for fourth grade reading, the child would probably never have occasion to learn the word in this grade. It could not be assumed, therefore, that "Pegasus" was of sufficient importance to include it in the list. In order to secure representative proper nouns, it was decided to include only those which had a frequency of four or over and did not depend on any one source for more than half of their score.

The completed analysis was found to contain approximately 10,000 different words. There were 3598 words occurring only once in the analysis, 1680 occurring twice and 965 words occurring three times. When these words of one, two and three frequency were eliminated from the list, it left 3750 words. Of these 80 percent were entirely different words.

This leaves a list of 3000 new and different words to constitute the fourth grade reading vocabulary.

SOME USES OF THE WORD LIST

This list should prove of special help to teachers who write supplementary reading material for remedial readers. Though the list has its limitations, it gives an idea of what words the child should be expected to know. The teacher can easily determine the degree of difficulty of her material by consulting the frequency scores of the words she is using. For this type of work it is recommended that only the word meanings that are listed be used. For more advanced work the derived forms of these words may be used sparingly.

Vocabulary drills can easily be constructed from this list to insure complete mastery of the necessary words for good fourth grade reading. Special emphasis can be placed on word meaning.

A more intelligent basis for selection of readers is made possible by this list. An important element in the evaluation of a book is the extent to which the vocabulary is suitable for the grade in which it is to be used. This can be ascertained by taking a sampling of a sufficient number of pages of the books under consideration and comparing the words with the *Fourth Grade Reading Vocabulary*. Other factors being equal, the book having the least number of words not in this list would be most suitable for the grade.

This list should be of great help to authors of new books. Many of our reading books are written by people far removed from the classroom and its direct contact with children. Their selection of vocabulary is often not based upon knowledge of the most suitable words to use because there has been no acceptable standard to follow. It is hoped that this list can to some extent help influence preparation of books with vocabularies suitable for the fourth grade.

LIMITATIONS OF THE STUDY

The writer is aware of the fact that this list is far from perfect. The addition of more source material or the complete analysis of all the selected material might have changed the list somewhat. It is also doubtful whether all of the derived forms of the words not appearing frequently enough to be accepted in the list should have been discarded. This list, together with some of the words not appearing, should be tested

out on representative fourth grade children to see if any new words are added or present words rejected. Other limitations of the list will no doubt be revealed as it is put to use.

NUMBER OF WORDS ANALYZED

This study represents the analysis of 205,000 running words out of 765,000 running words of source material. *The Bobbs-Merrill Fourth Reader,* which was analyzed in its entirety, makes the largest single contribution. It supplied 60,000 words to the study. The other fifteen sources contributed 145,000 running words.

SAMPLE OF THE WORD LIST

Key

Following each word in the list is a number which indicates the frequency of appearance of the word in the source material. A high number shows that the word was used very frequently, while a low number shows that the word was not used very often. Letters and abbreviations are used to indicate parts of speech. The key is given below.

a . . . . . adjective
adv . . . . . adverb
int . . . . . interjection
n . . . . . noun
v . . . . . verb
G . . . . . Gates Primary List

THE WORD LIST (sample)

a	3966	ball (toy)	11	cabbage	G
able	37	ball (shape)	12	cabin	9
about	414	balls (toy)	12	cactus (n)	4
above	47	balloon	6	cage	6
accident	7	bananas	10	cake	9
account (n)	5	band (n, hoop)	8	cakes	13
acre	4	band (music)	5	calf	7
acres	4	bang	7	California	8
across	70	bank (n, bldg.)	9	call (v)	41
act (v)	8	bank (edge)	26	called	159
activities	4	banks (edges)	5	calling	20
add	24	bar (metal)	5	calls (v)	8
added	17	bare (a)	8	came	412
addition (n)	15	barefoot	4	camel	7
address (speech)	4	barge	8	camels	7

dad	4	earthquakes	5	geography	5
daddy	6	easy	27	George	10
dainties	4	easily	21	German	5
dainty (a)	6	easier	6	get	226
dairy (n)	5	east	14	gets	12
daisies	4			getting	44
damp	7	fable	5	ghosts	4
dance (n)	8	fables	10	giant (n)	11
dance (v)	15	face (n)	63	gift (present)	8
dancing (v)	6	face (v)	6	gift (talent)	4
dandelion	6	faced	5		
Danes	6	faces (n)	18	ha	13
danger	43	fact	4	habits	6
dangerous	11	facts	12	had	1191
dare (v)	10	factories	12	hadn't	12
		factory	14	hail (int)	10
each	224	failed	4	hair	20
eager	12	faint (a)	7	haired	6
eagerly	12	fair (good)	4	half	53
eagles	5	fair (n)	5	hall (n)	19
ear	16	fair (pretty)	4	halls	8
ears	31			hammer (n)	5
early	40	general (leader)	20	hammered	4
earn	14	genie	17	hand	95
earned	5	gentle	8	handed	4
earth	65	gentleman	5	handful	6
		gently	12		

A STUDY OF THE SPEED OF WORD RECOGNITION

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READING is a psycho-physical process that begins with the word to be read and passes through various stages, among which are the transmission of light from the several parts of the word to the eyes, the formation of a real image of the word on each of the two retinae, the stimulation of the retinal end organs, the transmission of neural energy to the brain where fusion of the image from each eye into one mental image takes place, the transmission of neural energy from the visual areas to the (left) angular gyrus (1), and ends with the recognition of the word. It also involves coördinated innervation of the oculomotor, abducent, and trochlea nerves, as well as the cervical sympathetic.

This takes time. There are many factors that may increase the time consumed in the act of reading, among the more common of which are the following:

1. Externally the illumination (2) may be so low that more time is required to gain sufficient stimulation from the retinal image to affect the rest of the visual and recognition system adequately.

2. Errors of refraction (3, 4) in the eyes may make it necessary for compensatory muscular or interpretative activity, requiring additional time for adjustment and appropriate stimulation and image formation. This is especially true of hypermetropia, in which a measurable amount of excess contraction of the ciliary musculature must be made.

3. Defects and deficiencies of the ocular muscles (5, 6, 7) and their innervation may introduce slowing of the process while compensatory adjustment is attempted.

4. Defects of the visual fields (8, 9) and deficiencies of fusion (10, 11) may also introduce a lag in the transmission of the nervous impulses requisite to reading or seeing.

5. Defects or diseases of the retina, optic nerves, chiasm, and tracts (12), or the lack of appropriate elimination from them of waste products may restrict or slow the process as the neural discharge passes through these structures. This may apply equally well to the mid-brain, the occipital lobes (vision), and the area in which memory and recognition of words appears to be located.(13) Regardless of the reader's opinion as to localization, he must admit that the process of seeing and recognizing takes time, and if it takes time to see and recognize letters and words, slowness in doing so must affect the ability to read. If a person is slow

in recognizing words he must be slow in recognizing phrases, and such slowness must reduce the speed of reading. So much time may be required for the recognition of components of sentences that the thought of the sentence and its recall may be influenced adversely.

The speed of word recognition was measured, in this study, by means of a measuring tachistoscope consisting of a 35 mm. projector, so built that the film could be fed through it manually, frame by frame. The light from this instrument was interrupted by a timing shutter which permitted projection of the individual frames in measured exposures of various lengths. The first shutter used measured down to .01 second but, as will be explained in a later paragraph, it was necessary finally to change to a shutter with faster speeds. The words used in the study were photographed on 35 mm. film, one word to a frame. They were taken from the Gates Word List, the Thorndike Word List, the Gates-Huber (Work-Play) Word List, the Elson-Gray Word List (Basic Readers) and the Boston University Clinic Word List. An effort was made to select words that held about the same relative positions in all of the lists consulted. The selection of words covered the range from Pre-primary through the sixth reader and were arranged in ascending order. The technique of measuring the speed of word recognition was as follows: Previous to the test the words to be used were presented in context as a part of a reading test so that those which were not known by the child could be ruled out. This was necessary because a word must be known before it can be recognized, and if unknown words are included in such tests the speed for these words will be that of word analysis rather than of word recognition. The test itself was commenced by directing the child's attention to a projection screen about the size of a picture book page. The screen was placed at the usual reading distance and in about the same relation to the child being tested as a book would be in ordinary reading. A few very simple words were flashed on the screen for practice purposes, thus showing the child what was to be expected and to acquaint him with the procedure. The word projected appeared for a measured period on the screen in letters slightly larger than primer type. Illumination was kept constant in all cases. Following the preliminary practice flashes the measurement of the speed of word recognition was made by commencing with the simpler words and a speed of .01 second. Within the first few flashes the speed was varied until one was reached at which the child recognized known words consistently. Each word was flashed but once to avoid practice effects and the accumulation of after images through the photo-chemical

changes in the retina which might result from repetition. The word list is flashed up to the limit of the individual's recognition level to make sure that recognition can be maintained at the indicated speed.

In some cases with eye trouble, particularly those with hypermetropia or muscular imbalances, the speed of word recognition fell roughly in proportion to the development of fatigue incident to use of the eyes for work at the reading distance, but in cases without eye trouble or with but slight eye strain, the speed level, once established, remained constant. For example, if the indicated speed of word recognition was .02 second in a given case the child could recognize words at this speed and at all slower exposures, but could not recognize words at any higher speed. The sharpness with which the levels of recognition of words were cut off was very striking and somewhat surprising.

There was little relation between the speed of recognition of known words and their length up to five letters. Longer words occasionally caused a fall in the measured speed to the next lower level but never lower. It is possible that this was due to relatively less familiarity with the longer words or to the necessity for more fixations per word. This tendency was observed in some, but by no means all, of the cases. The fact that there was no marked difference in speed for words of different lengths within the limits specified together with but slight reduction in speed for longer words in some cases is consistent with the view that word recognition is dependent on the recognition of minimal cues rather than on critical observation of all or most of the components of words.

In the present study the speed of word recognition was measured in ninety cases, of which fifty were cases of difficult reading, and forty were children without reading trouble. The difference between the two distributions is marked. Among the poor readers the cases are pretty generally dispersed among the different speeds. The median falls at 0.145 second, while Q_1 is at 0.500 second, and Q_3 at 0.025 second. The range of this distribution is from 1.000 second and slower to 0.010 second and faster. The distribution presents two modes; one at either end. The one at the slower end of the range probably represents those whose speed is influenced by physical handicaps, such as ocular difficulties, while that at the opposite end probably represents those whose inferior reading is due to some other cause or causes.(14)

The distribution of cases without reading trouble is skewed at the faster end, showing that a large number of the cases represented had speeds of word recognition in excess of the fastest speed of which the in-

strument was capable. For this reason the tachistoscope is now equipped with a continuously variable shutter covering all speeds from 1. second to 0.0033 second and cases without reading trouble, examined since the present data were collected and in which the faster shutter was used, show the expected spread above 0.010 second, indicating that the median of these cases probably falls near the middle of the range from 0.010 second to 0.0033 second. On the basis of available data nothing further can be said of this group except that the Q_1, Md., and Q_3 of the present distribution *all* fall at or faster than 0.010 second. Q_1 falls near the slower limit of the 0.010 interval. The range is from .04 second to 0.010 second and faster.

Ten cases were rechecked after periods of treatment averaging 6.3 months. The average increment in the speed of word recognition was 0.490 second. *All* cases showed improvement in the speed of word recognition and in school work. Seven displayed increment in the horizontal diameter of the visual field, one exhibited a loss, and fields were not taken in the remaining two cases. The horizontal diameter of the visual field (15) is believed to bear a relation to the number of fixations required per line and hence to the speed of reading and possibly to the speed of word recognition, as is suggested by the fact that the majority of the cases exhibiting increment in speed also showed increment in this diameter of the visual field. The smaller number of cases available for recheck makes it inadvisable to do more than note the possible relationship. An earlier study, referred to in reference 9, has shown a tendency for the visual fields to be smaller among cases of educational disability than among others. Following treatment, groups of poor readers have shown increment in the horizontal diameter of the visual field.

Treatment of slow speed of word recognition in a child of average intelligence requires a preliminary investigation of both educational and physical factors that may have caused or predisposed to the condition. When the fundamental trouble is educational the speed of *picture* recognition is likely to be considerably faster than that of *word* recognition. When they are both below the average and at or near the same level, a physical cause may be suspected. Treatment of the physical causes includes commonly the correction of defects of the visual system, which interfere with adequate perception. Less often the cause is to be found in ocular, neural, and brain disease, endocrine disturbances, anaemia, and other diseases which interfere with reaction time. The educational treatment that we have found most productive is drill in recognition of known words at shorter and shorter exposures. This can be carried out

with flash cards and exercises of the kind, or by the use of the tachistoscope. The metronoscope may be used for the purpose. The author favors the use of the measuring tachistoscope, such as is described in this article, for the reason that increment in speed can be measured and a more accurate estimate of progress can be made.

SUMMARY

The speed of word recognition was measured in fractions of seconds in ninety cases, of which fifty were cases of difficult reading and forty were without reading trouble. Ten cases were re-examined after undergoing treatment and their improvement in speed of word recognition, extent of the horizontal diameter of the visual field, and school work is reported. The measuring tachistoscope is described. Treatment of slow word recognition is discussed briefly.

CONCLUSIONS

1. The study offers further evidence in support of the theory that reading is accomplished through the recognition of minimal cues.

2. The speed of word recognition is slower among cases of reading disability.

3. The speed of word recognition can be increased through appropriate treatment.

4. There appears to be some correspondence between increments in the speed of word recognition, increments in the horizontal diameter of the visual field, and improvement in school work.

TABULATION

	Reading disability cases	Cases without Reading Trouble
Median	0.145 second	Faster than 0.010 second
Q_1	0.500 second	Near slower limit of the *0.010 and faster* interval
Q_3	0.025 second	Faster than 0.010 second
No. cases	50	40
Total no. cases	90	
Range	1.000 second and slower to 0.010 second and faster	0.040 second to 0.010 second and faster

RECHECKED CASES

No. rechecked	10
Improvement in speed of word recognition	10
Improvement in school work	10
Increment in horizontal diameter of visual field	7
Decrement in horizontal diameter of visual field	1
Field measurements not taken	2
Average increment in speed of word recognition	0.490 second.
Average period between examinations	6.3 months.

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MOBILITY OF EMPLOYMENT OF YOUNG PEOPLE IN MERIDEN, CONNECTICUT

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THIS study[1] involves a detailed analysis of the employment histories of a random sample of the residents of Meriden between the ages of 14 and 30 years as of January 1, 1934. The data were obtained from an educational census taken by C.W.A. workers from December 1933 to February 1934. The results are not presented with any degree of confidence in their factual significance, which is precluded by the small number of cases, but with the hope that an exploratory method of analysis may be of interest for subsequent investigators. The careers of a group of young people are followed through, year by year, from the point when they became available for employment to the date of the survey; the initial period of unemployment before getting a first job, the length of the first period of continuous employment, the subsequent periods of unemployment, and shifting from job to job until relative occupational stability was obtained, are analyzed and related to the amount of schooling and other factors.

Summary.—The impact of the depression upon the young people of Meriden is shown by the lengthening period of initial unemployment. At the time of the survey no less than 40 percent of the young men becoming available for work between 1930 and 1933 had not obtained work within a year of becoming available, whereas only 18 percent of the group becoming available in the preceding 7 years had failed to find work within a year. The effect of the depression is still further shown by the increasing frequency and amount of unemployment: 75 percent of those becoming available from 1930 to 1933 experienced one or more periods of unemployment as contrasted with 59 percent of those from 1923 to 1929. Sixty-five percent of the men becoming available from 1923 to 1926 were employed throughout their first three years of availability, but only 52 percent of those from 1927 to 1930. Before 1930, the men with higher education had experienced greater stability of employment than had those with less education. Nearly all high school graduates found employment immediately, as contrasted with about 69 percent of those with not more than grammar school education and about 76 percent of those who had

[1] This study was made possible through the kindness of Dr. Nicholas Moseley, Superintendent of Schools in Meriden, who permitted the use of the census data, and was carried out under the direction of Professor Dorothy Swaine Thomas, to whom the author is indebted for guidance and constructive criticism.

not completed high school. Only 38 percent of the high school graduates, but 62 percent of those with not more than grammar school education, experienced one or more periods of unemployment. Eighty-one percent of the former were employed throughout their first three years available, but only 58 percent of the latter. Furthermore, the high school graduates who were employed continuously, shifted their jobs less often and so held longer jobs. From 1930 to 1933, as economic opportunity lessened, greater numbers of young people remained in school so that the educational level of those becoming available for work was higher and the association between amount of education and employment stability was less clear.

Limitations of the data.—The census from which the basic data were obtained was taken of one-tenth of the households in Meriden so selected as to give a purely random sample of the entire population. The sample obtained between the ages of 14 and 30 consisted of 983 persons, of whom 231 were still in school, 28 were never available for work, and 14 failed to report whether they were ever available. Thus only 710 persons, 351 males and 359[2] females, furnished relevant data for the analysis made in this study.

The principal difficulties encountered in the preliminary stages of analysis were those inherent in the use of data obtained by the questionnaire method, even though executed by personal interview. The schedules were carefully edited but missing data could not be supplied nor inexact data corrected. The following table shows the degree of apparent precision with which lengths of jobs and periods of unemployment were described by 710 persons:

	Number of persons	Percent
Precise answers:		
"no jobs"	61	8.6
Apparently precise:		
specific days, dates indicated	1	.1
specific months, dates indicated	156	22.0
lengths of periods indicated but some dates missing	37	5.2
in terms of years only	441	62.1
All answers refused on job history	14	2.0
	710	100.0

[2] Women are omitted from the present analysis. In general, the employment histories of young women show trends similar to those of young men, but less distinct. Women may have experienced greater difficulty than men in finding employment before the depression but after 1929 about the same proportions of both sexes failed to find employment in given lengths of time.

From this table it can be inferred that 36 percent of the 710 persons answered the pertinent questions adequately, 2 percent refused to answer, and the remaining 62 percent answered in terms of years only from which estimates had to be made of the periods of time involved. These limitations in the basic data should be kept in mind.

Mobility of employment or occupational mobility is here defined as the individual's chronological shifting from job to job or from employment to unemployment and *vice versa*. All of our measures of an individual's occupational mobility are based on his total time available for work before January 1, 1934. For males, total time available for work was estimated as the time since leaving school. In a few exceptional cases deductions were made for time spent needfully helping at home, in prolonged illness, or in returning to school. The distribution of males by number of years available for work and approximate age at leaving school[3] is shown in Table I.

Initial period of unemployment.[4]—Beginning at the date of first becoming available for employment the first characteristic of a job history is the occurrence or non-occurrence of an initial period of unemployment. The following table shows the distribution of 324 men, for whom this characteristic was reported and whose periods of availability were continuous, by length of initial period of unemployment and year of becoming available.

NUMBER OF YEARS IN INITIAL PERIOD OF UNEMPLOYMENT

Year of becoming available	No initial unemployment	Less than 1	1–2	2–3	3 and over	Total	Unknown
1914-22	61	2	1	1	6(1)	71	2
1923-26	57	11	8	1	4	81	6
1927-29	58	6	6	3	7(4)	80	2
1930	12	1	2		2(2)	17	1
1931	9	2	6	9(5)		26	
1932	9	3	12(6)			24	1
1933	6	19(14)				25	
Total	212	44(14)	35(6)	14(5)	19(7)	324	12

( ) Still unemployed on January 1, 1934.

Of the group becoming available before 1923, 86 percent reported that they obtained employment immediately, compared with 70 percent of

[3] Approximate age at leaving school had to be estimated from the reported age at time of census and the reported date of leaving school.

[4] In this study time spent on C.W.A. and P.W.A. jobs and in C.C.C. camps is considered as unemployment rather than as employment.

those becoming available from 1923 to 1926, and 72 percent of those from 1927 to 1929. In contrast to these large, though apparently decreasing proportions, the situation in the depression years 1930-1933 shows a striking contrast: only 39 percent of the men becoming available during these

TABLE I

NUMBER OF YEARS AVAILABLE FOR WORK BY APPROXIMATE AGE AT LEAVING SCHOOL, MALES

Number of years available	Approximate age in years: Less than 13	13	14	15	16	17	18	19	20	21	22	23	24 and over	Total	Unknown	Median
19–20	1													1		
18–19	1													1		
17–18		1												1		
16–17	2	3	4											9		13.8
15–16		2	5	1										8		14.4
14–15		2	2	4	1									9	1	15.1
13–14		2	4	4		1								11		14.9
12–13		1	3	4	8	3	1							20		16.2
11–12		1	4	1	3	3								12		16.0
10–11	1		1	3	7	5	6	1	1*					25		17.1
9–10	1	1*	4	1	7	2	2							18		16.3
8–9		1	2	5	2	6*	3	2	1					22		17.2
7–8		1	2	5	8**	5	2		1	1*		2	1	28		16.7
6–7	2	1	8	5	7*	4	4	3	1	1				36		16.3
5–6			3	4	5	4	4	1	1					22		16.8
4–5		1	4	3	8	4	2			1	1		1	25		16.6
3–4			1	4	5	3	3	1	2*					19		16.9
2–3			1	1	11	5	4	1		1		1*	2	27		17.1
1–2			1		5	5	6	3	2	1		1	1	25		18.2
Less than 1				1	3	7	4	7	1		1	1		25		18.4
Total	8	17	49	46	80	57	41	19	10	5	2	5	5	344		16.6
Unknown	1														5	

* Represents 1 man whose period of availability was not continuous.

years obtained employment immediately. The employment situation in these four years apparently became increasingly serious, for of the 43 available in 1930 and 1931, 49 percent obtained immediate employment compared with only 31 percent of the 49 becoming available in 1932 and 1933.[5]

[5] It cannot be emphasized too often that the numbers are too small to give much assurance as to the precise significance of the difference between these percentages, and those presented in the following pages. The reason for presenting the data as percentages is to show relative trends. The percentages themselves have large probable errors due to the small number of cases. To keep this fact before the reader, the bases on which the percentages are computed are always shown either in the tables or with the percentages.

Turning to a consideration of how long a time it took the remaining men to secure employment, we are confronted with the indeterminateness of this period for those who were still unemployed as of January 1, 1934. Because of the different degrees of seriousness of unemployment represented by these "never employed" we shall consider them in groups according to the length of time unemployment was possible and compare them with others for whom like periods were possible had not employment been found.

Thus, 11 percent of the men becoming available before 1923, 16 percent of those from 1923 to 1926, and 20 percent of those from 1927 to 1929 failed to secure employment within one year. Of the 92 men becoming available for work from 1930 to 1933, 45 had not secured employment within the first year of availability which, however, had not fully elapsed for 14 who left school in 1933. Excluding these 14, the percentage failing to secure jobs within a year was 40 percent, showing a definite upward trend. Similarly, the trend in the proportion of those failing to find work within 2 years is on the whole upward, extending from 10 percent of the men available before 1923, to 6 percent of those from 1923 to 1926, to 12½ percent of those from 1927 to 1929, and to 18 percent of 61[6] men becoming available from 1930 to 1932.[7]

First period of continuous employment.—In fairness to all age groups, this aspect of occupational mobility must also be examined in relation to opportunity to remain employed. Excluding from the 212 men who found immediate employment one whose subsequent history was unreported and 4 men who were still employed on January 1, 1934, but whose first com-

Number of years before becoming unemployed	Available 1914–22	Available 1923–26	Available 1927–29	Available 1930–33
Less than 1	1	4	8	10
Less than 2	3	4	12	
Less than 3	4	5	16	
Less than 4	6	6	20	
Less than 5	6	7		
Less than 6	6	7		
Less than 7	7	14		
Total number of men becoming available in each period	60	57	58	32

[6] Sixty-seven minus 6 still unemployed.

[7] These trends, as well as those described hereinafter, may be affected by two possible factors which cannot be measured: the memory factor may have been active in furnishing less accurate reports on the earlier years; and a selection factor may have removed from Meriden certain young people who possessed characteristics associated with "unsuccessful" careers. These removals may or may not have been compensated for by the in-migration of "unsuccessful" young persons from other places.

plete year of possible employment had not yet elapsed, the following table shows the number of men, in each group, who became unemployed within specified periods of time.

In spite of the small number of cases, the trend is consistent. The proportions becoming unemployed within each specified period increase as the number of years available decreases.

A similar tabulation was made of the 80 men who failed to secure employment until after an initial period of unemployment in an attempt to answer the following question: Is an initial period of unemployment evidence of economic maladjustment or does it mean that the more able persons are looking around for jobs to which they will be more suited than the one immediately available? Of the 80, one's history was incomplete, 32 became available before 1927, 18 from 1927 to 1929, and 29 from 1930 to 1933. Four of the 32 men became unemployed again in less than a year, 5 of the 18, and 13 of 25 (excluding 4 men as above). These proportions are higher than those of the immediately employed. So also are the proportions becoming unemployed again in less than 2 years, namely, 7 men out of 32, 7 of 18, and 13 of 20. But the numbers are too small to permit valid generalizations.

Frequency and amount of unemployment.—Further evidence that the successive groups becoming available for work experienced increasing difficulty in finding and retaining employment is furnished by the increasing frequency of periods of unemployment as shown in the following distribution of the men reporting:

NUMBER OF PERIODS OF UNEMPLOYMENT

Year of becoming available	None		1 or more		Total		Unknown
	Number	Percent	Number	Percent	Number	Percent	Number
1914–22	37	53	33	47	70	100	3
1923–26	36	45	44	55	80	100	7
1927–29	29	37	50	63	79	100	3
1930–33	23	25	70	75	93	100	1
Total	125	39	197	61	322	100	14

The proportions suffering periods of unemployment were increasing consistently, even before the depression years, in spite of the greater opportunity which the men longest available had for becoming unemployed.

Lengths of periods of unemployment could only be properly considered in relation to the length of time for which they were possible. Their consideration would be further complicated by the fact that 35 percent of the reported periods of unemployment were uncompleted on January 1, 1934, and hence of indeterminate length. However, based on the

first 3 years of availability for men becoming available before 1931, the following table shows decreasing proportions of employment for the successive groups even before the depression:

MEN BECOMING AVAILABLE

Proportion of time employed of first 3 years available	1927–30		1923–26		1914–22		Total
	Number	Percent	Number	Percent	Number	Percent	Number
All	50	52	53	65	57	80	160
One half——less than all	17	17	19	23	5	7	41
Less than one half	21	22	6	7	3	4	30
None	9	9	4	5	6	9	19
Total	97	100	82	100	71	100	250
Unknown	3		5		2		10

Number of jobs held.—If the degree of occupational mobility was increasing because of greater frequency of unemployment, was it also increasing because of job shifting which was not reported to be preceded by unemployment? Since the number of job changes is directly related to the length of time of exposure to employment, the first 3 years of availability can again be taken as a base period for 158 men who were employed throughout that period and reported the number of jobs held. The proportions shown in the following table do not suggest that there was, on the whole, any increase or decrease in the amount of job shifting by the successive groups which was not occasioned by unemployment.

NUMBER OF JOBS IN FIRST 3 YEARS

Year of becoming available	1		2		3 or more		Total		Unknown
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
1914–22	27	49	18	33	10	18	55	100	2
1923–26	29	55	15	28	9	17	53	100	
1927–30	30	60	10	20	10	20	50	100	
Total	86	55	43	27	29	18	158	100	2

Occupational mobility related to amount of education.—Having found indications that general economic conditions contribute to the degree of mobility of employment, the time factor should be held constant while we investigate the association of other factors with mobility. Unfortunately the cases are too few to *eliminate* the influence of time, and the relationships of the other factors to it are important. For instance, Table I shows that the median age at leaving school for males increased from about 14 years to about 18 years from 1917 to 1933, with about two thirds of this increase taking place by 1923, the remaining third after 1931. The years of business prosperity and the period of no increase in

approximate age at leaving school coincide. Furthermore we should expect to find an increase in the median amount of education acquired, with the increase in approximate age at leaving school. Amount of education was defined as the reported grade of formal education completed. Where education was partly formal, partly vocational other than formal, certain consistent allowances were made for different amounts of the latter to estimate the equivalent completed grade of formal education. It was found that the median grade of education completed was the eighth for men available over 13 years, the ninth for men available 11 and 12 years, the tenth for men available 8 to 10 years, the ninth again for those available 3 to 7 years, the tenth for those available 2 years, and the twelfth for those available less than 2 years. Thus the median grades completed do follow the trend of the median ages at leaving school.

Were the men who completed higher grades more successful in finding employment immediately upon becoming available than the men who completed only the lower grades? To lessen the influence of the time factor the men becoming available for work since 1929 will be excluded in making this and other comparisons based on education. The following table shows the numbers and proportions of men available before 1930 who found employment immediately and the numbers finding it within specified periods of time, by grade of education completed:

NUMBER OF YEARS IN INITIAL PERIOD OF UNEMPLOYMENT

Grade of education completed	No initial unemployment		Less than 1	1-2	2-3	3-4	4 and over	Total	Unknown
	Number	Percent	Number	Number	Number	Number	Number	Number	Number
13 and over	7							7	2
12	24	96		1				25	2
11	22	76	5				2(1)	29	
10	18	75	3	2	1			24	2
9	34	77	4	3	1	1	1	44	2
8	48	69	4	8	3	1	6(4)	70	1
6-7	23	70	3	1		1	5	33	1
Total	176	76	19	15	5	3	14(5)	232	10

( ) Still unemployed on January 1, 1934.

The men with at least a high school education seem to have had a fairly distinct advantage over all others but those with some high school education had very little advantage over those completing the eighth grade or less.[8]

[8] Even with the elimination of those available since 1929, we are still considering a very heterogeneous group with respect to years available and this fact may be concealing differences or similarities in ability to find employment which existed among the educational groups at different periods of time.

Of the 103 men with not more than a grammar school education, 24 percent had not found employment within 1 year after becoming available; 16 percent within 2 years; 13 percent within 3 years; and 11 percent within 4 years. Of the 97 men completing the ninth, tenth, or eleventh grades, 11 percent had not found employment within 1 year, 6 percent within 2 years, 4 percent within 3 years, and 3 percent within 4 years. Thus, although the men with some high school education were not much more successful than those with less education in respect to finding immediate employment, the former found employment within shorter periods of time. An investigation was made of the relationship between duration of the first period of employment and amount of education but so far as our data could be utilized to throw light on this relationship, continuity of employment seemed not to be much more closely associated with higher education than with less.

Comparing 229 men whose frequency of unemployment was reported, 62 percent of 32 men with at least a high school education had suffered no unemployment as compared with 45 percent of 95 with some high school education, and 38 percent of 102 with not more than grammar school education. It seems to be fairly clear that, on the whole, unemployment occurred less frequently among the more highly educated.

In order to examine and compare relative amounts as well as frequencies of unemployment, the first 3 years of availability for work can again be taken as a base period. The application of this measure also suggests that the men with more education had an advantage, as shown in the following table:

GRADE OF EDUCATION COMPLETED

Proportion of time employed of first 3 years available	0–8		9–11		12 and over		Total
	Number	Percent	Number	Percent	Number	Percent	Number
All	60	58	66	68	26	81	152
One half—less than all	16	15	18	19	5	16	39
Less than one half	15	14	9	9	1	3	25
None	13	13	4	4			17
Total	104	100	97	100	32	100	233
Unknown	1		4		4		9

It should perhaps be stressed at this point that whereas the group of men longest available for work showed the greatest tendency toward stability of employment according to all the measures applied, the men with most education also exhibited this tendency but only four men are common to the two groups.

The following tabulation of 151 men who reported that they were employed throughout their first 3 years available and also reported their education and the number of jobs held indicates that the men with less education were more susceptible to job changes which were not occasioned by unemployment.

NUMBER OF JOBS IN FIRST 3 YEARS

Grade of education completed	1		2		3 or more		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
12 and over	19	73	6	23	1	4	26	100
9–11	35	53	18	27	13	20	66	100
0–8	26	44	19	32	14	24	59	100
Total	80	53	43	28	28	19	151	100

On the whole, so far as any conclusions can be drawn from the data at hand, in spite of apparently increasing difficulties in finding and retaining employment even before the depression, the men becoming available before 1930 who had completed the higher grades of education were subject to greater stability of employment than were those with less education. This probably means that the schools were generally selective of the more intelligent and more capable persons before 1930. From 1930 to 1933 we have seen that the general educational level, as represented by the median grades completed, increased as economic opportunity decreased. To what extent amount of education has been a differentiating factor in the employment histories of men becoming available since 1930 cannot be determined from the few data at hand.[9]

Occupational mobility related to type of education.—It would be extremely desirable to get an indication of whether vocational training of any kind contributes to the degree of occupational mobility. There are some suggestions that differences in stability may be associated with vocational education or its lack but treating our data in these further subdivisions is not warranted by the number of cases. It would of course again be desirable to eliminate as much as possible of the time factor. In order to do this and to eliminate as far as possible the effect of *amount* of education, the group to be compared would have to be limited to the men

[9] It would also be of interest to determine how important a stabilizing factor age at leaving school may be in relation to subsequent occupational mobility. As has been indicated, this factor is highly correlated with educational achievement and the influence of the former could not be isolated without more elaborate statistical treatment than the data warrant. The combined influence of the two factors doubtless played a part in the results which have been described as related to amount of education.

available for work from 4 to 13 years who completed the ninth through twelfth grades. Within this group we can distinguish broadly two types of education which can be designated "formal education only" and "partly vocational education." A man's education was considered partly vocational if it was reported that he had completed as a minimum at least two months of study in one subject which would contribute directly to fitting him for employment. There were 64 men in this latter group, 50 in the former. The median grade of education completed by the 64 with some vocational education was the eleventh; by the 50 with formal education only, the tenth. But those with some vocational education do not appear to have any advantage with respect to the length of initial period of unemployment for only 78 percent of them found employment immediately compared with 82 percent of those with formal education only. The proportions failing to find employment in less than a year were 8 percent of those with formal education and 11 percent of those with some vocational education; and failing to find employment within 2 years, 2 percent of the former and 6 percent of the latter.

Conclusions.—It has been indicated repeatedly that we cannot place much confidence in the factual significance of our findings in this study. But even the few data provided show a trend so consistent as to be worthy of note: it has been increasingly difficult for young people leaving school to find and to retain employment. Occupational mobility has increased particularly because of the increasing frequency of periods of unemployment. Before the depression, amount of education tended to be a criterion of employment stability. Now, higher education precedes both stable and unstable careers and the implication for educational programs has been widely recognized.

The value of the longitudinal method of analyzing employment histories, by which the preceding results and conclusions are obtained, lies in its comparative simplicity and the facility with which the influence of any known factors may be investigated. The method is perhaps particularly adaptable for use in programs designed to follow the careers of persons leaving school each year.

CHANGING CONCEPTIONS OF MAJOR TOPICS IN GENERAL SCIENCE TEXTBOOKS*
(1911-1934)

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PROBLEM

A knowledge of the relative values of various major topics found in general science textbooks should be of interest to the general science teacher as well as to the textbook writer. This investigation, therefore, represents an attempt to determine the change from 1911 to 1934 in the relative values of various subject-matter elements.

TECHNIQUE OF STUDY

Some more or less arbitrary criteria of selection had to be set up to reduce the number of contributing sources of data sufficiently to make the investigation practicable.

Therefore, the selection was based primarily upon the availability and wide use of the following eighteen general science textbooks:

PERIOD 1911-16

	Textbook	*Author*	*Publisher*	*Copyright Date*
1.	First Year Science	Snyder	Allyn and Bacon	1914
2.	General Science	Clark	American Book Company	1912
3.	General Science	Elhuff	D. C. Heath and Company	1916
4.	Introduction to General Science	Rowell	The Macmillan Company	1911

PERIOD 1917-23

	Textbook	*Author*	*Publisher*	*Copyright Date*
1.	General Science	Bedford	Allyn and Bacon	1921
2.	Civic Science in Home and Community	Hunter and Whitman	American Book Company	1923

* Master's thesis (unpublished) "Changing Conceptions in General Science Textbooks" (1911-1934), Upper Montclair, N. J.: State Teachers' College, 1935), X507, pp. 4-31, 87-91, 104. Only such portions of the above study which pertain to major topics are here summarized.

3.	The Science of Common Things	Tower and Lunt	D. C. Heath and Company	1922
4.	An Introduction to the Study of Science	Smith and Jewett	The Macmillan Company	1918

PERIOD 1924-28

	Textbook	*Author*	*Publisher*	*Copyright Date*
1.	General Science	Snyder	Allyn and Bacon	1925
2.	New Introduction to Science	Clark	American Book Company	1928
3.	General Science	Elhuff	D. C. Heath and Company	1925
4.	Science of Home and Community	Trafton	The Macmillan Company	1926

PERIOD 1929-34

	Textbook	*Author*	*Publisher*	*Copyright Date*
1.	Our Environment: Its Relation to Us (Book 1)	Carpenter and Wood	Allyn and Bacon	1933
	Our Environment: How We Adapt Ourselves to It (Book II)	Carpenter and Wood	Allyn and Bacon	1934
	Our Environment: How We Use and Control It (Book III)	Wood and Carpenter	Allyn and Bacon	1934
2.	Problems in General Science	Hunter and Whitman	American Book Company	1934
3.	The World About Us	Pulvermacher and Vosburgh	D. C. Heath and Company	1930
4.	General Science for Today	Watkins and Bedell	The Macmillan Company	1932

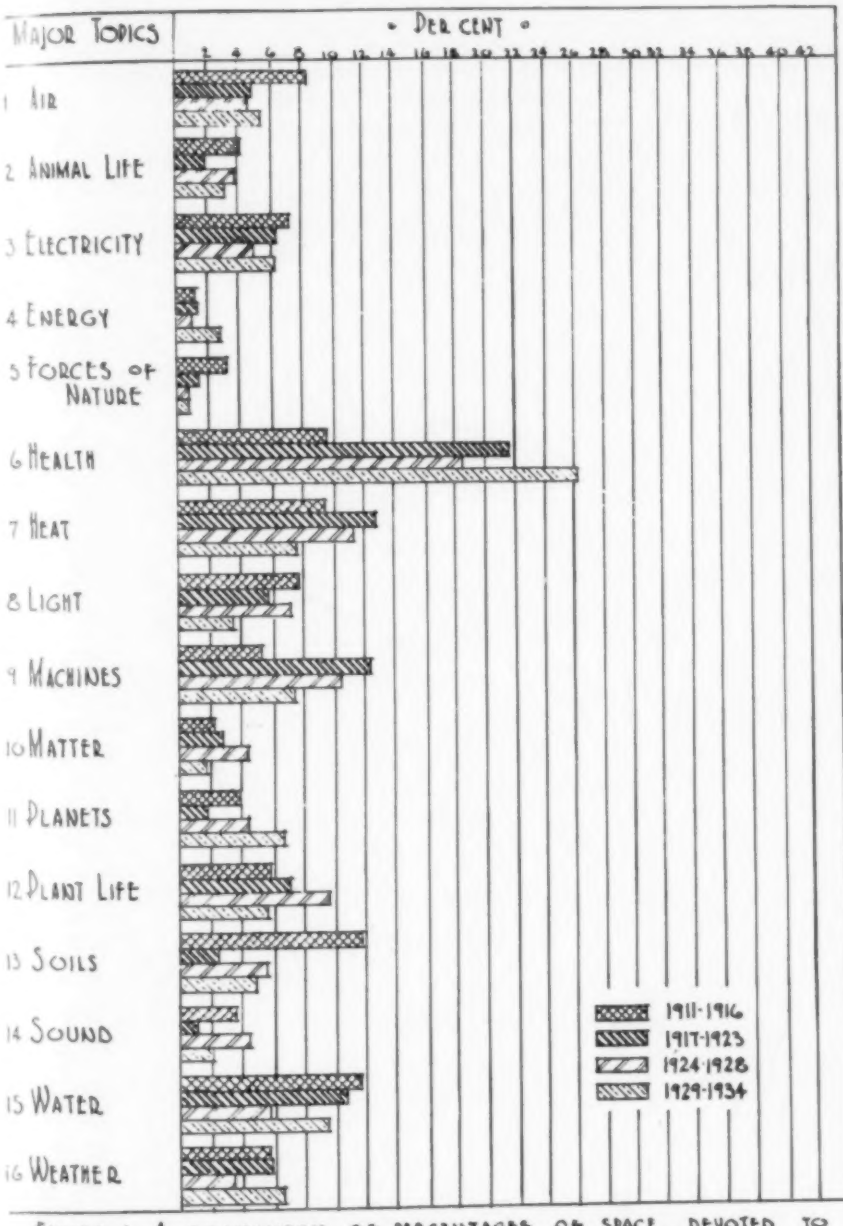

FIGURE 1 - A COMPARISON OF PERCENTAGES OF SPACE DEVOTED TO SIXTEEN MAJOR TOPICS IN FOUR GENERAL SCIENCE TEXTBOOKS PUBLISHED OVER FOUR PERIODS: 1911-1916, 1917-1923, 1924-1928, 1929-1934.

TABLE I

NUMBER OF PAGES AND PERCENTAGE OF TOTAL SPACE DEVOTED TO EACH OF THE SIXTEEN MAJOR TOPICS IN FOUR GENERAL SCIENCE TEXTBOOKS PUBLISHED 1911-1916

TEXTBOOK PUBLISHERS

Major Topics	Allyn and Bacon		American Book Co.		D. C. Heath and Co.		The Macmillan Co.		Summary Total	
	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent
I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1. Air	25	5.4	38	10.7	47	11.5	18	6.1	128	8.4
2. Animal Life	24	5.2	2	.6	23	5.6	13	4.4	62	4.1
3. Electricity	11	2.4	46	13.0	35	8.5	16	5.4	108	7.1
4. Energy	3	.6	2	.6	6	1.5	7	2.4	18	1.2
5. Forces of Nature	28	6.1	3	.8	1	.2	18	6.1	50	3.3
6. Health	33	7.2	28	7.9	50	12.2	32	10.8	143	9.5
7. Heat	9	2.0	38	10.7	53	13.0	38	12.9	138	9.1
8. Light	9	2.0	69	19.5	22	5.4	16	5.4	116	7.7
9. Machines	1	.2	30	8.5	37	9.0	9	3.1	77	5.1
10. Matter	1	.2	11	3.1	15	3.7	7	2.4	34	2.2
11. Planets	32	7.0	1	.3	6	1.5	21	7.1	60	3.9
12. Plant Life	32	7.0	1	.3	38	9.3	16	5.4	87	5.7
13. Soils	112	24.3	6	1.7	30	7.3	32	10.9	180	11.9
14. Sound	1	.2	40	11.3	11	2.7	3	1.0	55	3.6
15. Water	93	20.2	31	8.7	24	5.9	30	10.2	178	11.7
16. Weather	46	10.0	8	2.3	11	2.7	19	6.4	84	5.5
Total	460	100.0	354	100.0	409	100.0	295	100.0	1518	100.0

This table should be read as follows: In Allyn and Bacon Textbook, Column II, 25 pages were devoted to the topic, Air, which is 5.4 percent of the entire book.

The Summary Total, Column X, shows that a total of 128 pages in textbooks examined was devoted to the topic, Air. This is 8.4 percent of all four books, etc.

TABLE II

NUMBER OF PAGES AND PERCENTAGE OF TOTAL SPACE DEVOTED TO EACH OF THE SIXTEEN MAJOR TOPICS IN FOUR GENERAL SCIENCE TEXTBOOKS PUBLISHED 1917-1923

TEXTBOOK PUBLISHERS

Major Topics	Allyn and Bacon		American Book Co.		D. C. Heath and Co.		The Macmillan Co.		Summary Total	
	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent
I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1. Air	32	8.4	18	3.8	22	5.8	18	3.0	90	4.9
2. Animal Life	12	3.1	9	1.9	8	2.1	3	.5	32	1.8
3. Electricity	24	6.3	20	4.2	44	11.7	28	4.6	116	6.3
4. Energy	9	2.4	2	.4	0	0	13	2.1	24	1.3
5. Forces of Nature	18	4.7	3	.6	0	0	5	.8	26	1.4
6. Health	55	14.4	194	40.9	65	17.3	85	13.9	399	21.7
7. Heat	32	8.4	39	8.2	74	19.6	92	15.1	237	12.9
8. Light	28	7.4	19	4.0	40	10.6	18	3.0	105	5.7
9. Machines	24	6.3	83	17.5	0	0	124	20.4	231	12.5
10. Matter	2	.5	1	.2	0	0	50	8.2	53	2.8
11. Planets	28	7.4	3	.6	0	0	2	.3	33	1.8
12. Plant Life	28	7.4	12	2.5	36	9.6	55	9.0	131	7.1
13. Soils	21	5.5	13	2.7	0	0	11	1.8	45	2.4
14. Sound	10	2.6	6	1.3	2	.5	0	.0	18	1.0
15. Water	56	14.7	34	7.2	48	12.7	60	9.8	198	10.8
16. Weather	2	.5	19	4.0	38	10.1	46	7.5	105	5.6
Total	381	100.0	475	100.0	377	100.0	610	100.0	1843	100.0

Consult footnote in Table I for a statement concerning the interpretation of data in this table.

TABLE III

NUMBER OF PAGES AND PERCENTAGE OF TOTAL SPACE DEVOTED TO EACH OF THE SIXTEEN MAJOR TOPICS IN FOUR GENERAL SCIENCE TEXTBOOKS PUBLISHED 1924-1928

TEXTBOOK PUBLISHERS

Major Topics	Allyn and Bacon		American Book Co.		D. C. Heath and Co.		The Macmillan Co.		Summary Total	
	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent
I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1. Air	35	6.1	5	1.1	47	11.5	6	1.1	93	4.6
2. Animal Life	27	4.7	12	2.6	23	5.6	14	2.4	76	3.8
3. Electricity	25	4.3	24	5.2	35	8.5	15	2.7	99	4.9
4. Energy	9	1.6	2	.4	6	1.5	1	.2	18	.9
5. Forces of Nature	12	2.1	4	.9	1	.2	0	0	17	.8
6. Health	37	6.4	180	39.2	50	12.2	111	19.6	378	18.8
7. Heat	79	13.7	39	8.5	53	13.0	59	10.5	230	11.5
8. Light	41	7.1	40	8.7	22	5.4	44	7.8	147	7.3
9. Machines	20	3.5	45	9.8	37	9.0	105	18.6	207	10.4
10. Matter	19	3.3	33	7.2	15	3.7	18	3.2	85	4.3
11. Planets	48	8.4	15	3.3	6	1.5	21	3.7	90	4.5
12. Plant Life	60	10.4	43	9.4	38	9.3	52	9.2	193	9.6
13. Soils	50	8.7	6	1.3	30	7.3	23	4.1	109	5.4
14. Sound	9	1.6	4	.9	11	2.7	64	11.3	88	4.4
15. Water	67	11.7	7	1.5	24	5.9	14	2.4	112	5.5
16. Weather	37	6.4	0	0	11	2.7	18	3.2	66	3.3
Total	575	100.0	459	100.0	409	100.0	565	100.0	2008	100.0

Consult footnote in Table I for a statement concerning the interpretation of data in this table.

TABLE IV

NUMBER OF PAGES AND PERCENTAGE OF TOTAL SPACE DEVOTED TO EACH OF THE SIXTEEN MAJOR TOPICS IN FOUR GENERAL SCIENCE TEXTBOOKS PUBLISHED 1929-1934

TEXTBOOK PUBLISHERS

Major Topics	Allyn and Bacon		American Book Co.		D. C. Heath and Co.		The Macmillan Co.		Summary Total	
	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent	No. of Pages	Per-cent
I	II	III	IV	V	VI	VII	VIII	IX	X	XI
1. Air	79	5.2	27	4.1	42	11.2	24	3.8	172	5.4
2. Animal Life	38	2.5	20	3.0	2	.6	38	6.0	98	3.1
3. Electricity	74	4.8	53	8.0	21	5.6	52	8.2	200	6.2
4. Energy	62	4.1	4	.6	9	2.4	16	2.5	91	2.8
5. Forces of Nature	5	.3	7	1.0	3	.8	11	1.7	26	.8
6. Health	284	18.6	210	31.5	138	36.8	207	32.7	839	26.1
7. Heat	138	9.0	42	6.3	22	5.9	41	6.4	243	7.6
8. Light	39	2.5	32	4.8	15	4.0	29	4.5	115	3.6
9. Machines	120	7.8	86	12.9	11	3.0	29	4.5	246	7.7
10. Matter	12	.8	22	3.3	3	.8	22	3.4	59	1.8
11. Planets	124	8.1	39	5.8	17	4.6	34	5.4	214	6.7
12. Plant Life	101	6.6	34	5.1	19	5.1	24	3.8	178	5.5
13. Soils	95	6.2	21	3.2	2	.5	32	5.0	150	4.7
14. Sound	19	1.2	15	2.3	11	2.9	19	3.0	64	2.0
15. Water	206	13.5	30	4.5	29	7.8	36	5.7	301	9.4
16. Weather	134	8.8	25	3.6	31	8.0	22	3.4	212	6.6
Total	1530	100.0	667	100.0	375	100.0	636	100.0	3208	100.0

Consult footnote in Table I for a statement concerning the interpretation of data in this table.

For ease of interpretation the twenty-four years included in this analysis have been divided into four periods as indicated. General Science textbooks of four publishers were used for each period. It is interesting to note that in the last period (1929-34) one publisher brought out a three book series which, for convenience, will be regarded as a unit. Therefore, from now on reference will be made to sixteen general science textbooks, or four for each period.

From the table of contents of each textbook examined, it would seem that in nearly every case there are sixteen major topics, namely air, animal life, electricity, energy, forces of nature, health, heat, light, machines, matter, planets, plant life, soils, sound, water, and weather. The data were then arranged alphabetically by periods in Tables I, II, III, and IV for purpose of showing page percentages of space based on the total books used within a period. A page percentage comparison for the four periods taken from the summary totals, column XI, of each table is illustrated in Figure I.

These topics as listed here in the table correspond closely to many of those selected by Curtis, Downing, Heinman, Trafton, Webb, and Weekel in their analyses of subject content of general science textbooks. There is also close agreement with respect to the percentage of total space devoted to some of the major topics. The reason, perhaps, for this likeness is that some of the same texts were used in both investigations.

It is quite evident that textbooks do form a source of objective data, but it is also true that results of an investigation of this character are certain to be more or less subjective. No two investigators analyzing the same materials would have distributed them under exactly the same headings.

HANDEDNESS AND READING ABILITY IN HIGH SCHOOL AND COLLEGE STUDENTS

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THE PROBLEM

THAT a lack of unilateral dominance is in some way related to disabilities in speaking and reading seems to be established by investigations of Bryngelson (1), Dearborn (2), Monroe (6) (7), Orton (8) (9) (10), Orton and Travis (11), Travis (12) and Travis and Johnson (13). On the basis of this belief directors of speech clinics and reading clinics have tested the handedness of many children and attempts have been made to change handedness, to strengthen unilateral dominance. In reading, techniques have been developed to help the left-handed and ambidextrous child learn the proper left-right sequence of letters. The present paper is concerned primarily with the effect of handedness on reading ability. It is significant that most studies of this problem have been made on elementary school children—on children who have only recently learned to read. Among the factors which have been associated with these young retarded readers are preponderance of left-eyedness, lack of occular and manual dominance, mixed conditions of occular and manual dominance, shifts in handedness, ambidexterity, letter and word reversals, proportionately high incidence of left-handedness in their immediate families, facility in reading from a mirror, and lack of facility of progressive reading movements to the right. In view of remedial reading programs in high schools and colleges it would seem worthwhile to discover whether or not at this later age and grade level handedness is still related to reading ability and is still of diagnostic value. Have left-handed, ambidextrous, and shifted students in high school and college outgrown whatever reading difficulty they may have had during the elementary age and grade levels? In order to test this question the author studied approximately 200 high school seniors and college students classified as left-handed, ambidextrous, and shifted.

THE PROCEDURE

The University of Minnesota Speech Clinic Laterality Questionnaire was used to determine handedness. This questionnaire consists of fourteen statements of manual activities—such as, "which hand throws a ball? which hand uses a hammer? which hands cut with the knife when

eating?'' The subject encircles an ''L,'' ''R,'' or ''E'' after each question to indicate whether he almost always performs that act with the left, right, or either hand. Hull (4) determined the reliability and validity of 11 of the test items. She found that answers to the questionnaire agreed with the actual performance of 220 students more than 90 percent of the time on every item except two. One of these showed 89 percent and the other 81 percent agreement. Repetition of the questionnaire by 160 students showed that the second answer agreed with the first over 90 percent on every item except one, and this one showed 86 percent agreement. For the purpose of selecting a small atypical group from a large unselected population the questionnaire is both practical and adequate.

As part of the study under consideration about 2000 questionnaires were filled out by students at the University of Minnesota. Approximately three fourths of these students were freshmen. Likewise all of the seniors in two Minneapolis high schools answered the questionnaire—550 from Central and 450 from Edison High School. A laterality index was determined for each student by the formula: the number of R's encircled plus half the E's encircled divided by the total number of items. Thus, a completely right-handed individual would obtain a laterality index of 1.00 and a completely left-handed individual an index of .0. All persons with a laterality index below .30 were classified as left-handed; those with a laterality index between .30 and .85 were considered ambidextrous; and all who answered ''yes'' to the question, ''Were you ever changed from the left to right hand in writing?'' were classified as shifted.

The reading ability of these subjects was then tested by the Minnesota Reading Examination, Form A, and the Minnesota Speed of Reading Test, Form A. All of the high school seniors, selected according to handedness, were required to take the reading tests. The University subjects were all asked to take the reading tests, and those who responded did so voluntarily. Approximately one third to one fourth of the number asked responded. Table I gives the distribution of laterality indices of all subjects tested in reading. Nearly two thirds of this number were males.

Reading tests were also given to a right-handed control group. This group consisted of all seniors in Edison and Central High Schools who had a laterality index of 1.00, who had no history of left-handedness in the family, no history of stuttering, and who did not check any of the items on the questionnaire indicating difficulty with speaking, reading, writing, or spelling. By these rigid criteria a group of 63 was obtained from Edison High School and 67 from Central High School.

TABLE I

THE DISTRIBUTION OF LATERALITY INDICES OF SUBJECTS TESTED IN READING

	University of Minnesota Subjects				High School Seniors			
Lat. Index	Shifted	Ambi-dextrous	Left-handed	Total	Shifted	Ambi-dextrous	Left-handed	Total
.9–.99	1	..	..	1	8	..	..	8
.8–.89	7	12	..	19	3	28	..	31
.7–.79	3	9	..	12	5	13	..	18
.6–.69	4	1	..	5	3	3	..	6
.5–.59	4	3	..	7	2	..	..	2
.4–.49	2	1	..	3	1	2	..	3
.3–.39	3	4	..	7	2	3	..	5
.2–.29	12	..	4	16	5	..	5	10
.1–.19	4	..	13	17	2	..	5	7
.0–.09	1	..	11	12	1	..	5	6
Totals	41	30	28	99	32	49	15	96

In most cases some measure of intelligence was available. For the University subjects the scores made on the College Ability Test were used. For the high school subjects intelligence quotients obtained from various mental examinations were equated and interpreted according to the Terman Test A, by means of Finch's(3) and Kefauver's(5) tables.

THE RESULTS

The results of the experiment may be summed up briefly. On the Minnesota Reading Examination the mean for 86 shifted, ambidextrous, and left-handed University students, mostly freshmen, was 97.1. The average score for college sophomores is 91. On the Minnesota Speed of Reading Test the mean for 98 shifted, ambidextrous, and left-handed subjects was 21.5. The norm for college freshmen is 20. This superiority of left-handed, ambidextrous, and shifted students cannot be attributed to intelligence, because the average College Ability Test score for the group was almost identical with that of all freshmen. It may be that at the University age level whatever reading difficulty existed earlier has been overcome. It may be that the relatively high intelligence of college students has been an important factor in developing good reading habits. It may be, further, that some motivating factor in the academic advancement to the college level has helped stimulate facility in reading. The data from this experiment do not furnish any answer to these hypotheses. However, since the reading tests were taken voluntarily it is likely that a selective factor may have tended to eliminate the poorest readers.

For the high school subjects the reading tests were compulsory. Here, the scores point to a slight inferiority in the left-handed, ambidextrous,

and shifted pupils. Table II presents these results. None of the differences between experimental and control groups are significant—i.e. in no case was the obtained difference divided by the sigma of the difference greater than three, the generally accepted criterion of statistical significance. However, several interesting facts are revealed in the table. Considering only the Minnesota Reading Examination, one can see that the

TABLE II

THE READING TEST SCORES OF HIGH SCHOOL SENIORS

	Minnesota Reading Examination									Speed of Reading Test		
	Total Score			Part I			Part II					
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Edison High School												
*Total exp. group	60.9	19.4	41	26.7	11.5	43	11.9	3.6	41	15.0	5.3	43
Total control group	64.7	15.5	62	28.5	9.0	63	12.6	2.9	62	17.8	5.4	62
**Exp. group matched	61.5	20.9	26	27.5	12.8	27	11.7	3.7	26	15.2	5.2	27
Control group matched	66.5	15.4	26	30.3	8.3	27	12.6	2.9	26	18.0	5.1	27
***Subjects with L.H. or stuttering in family	60.8	16.1	24	25.4	9.6	24	12.4	3.5	24	14.5	4.9	24
Central High School												
Total exp. group	70.1	19.3	47	33.1	11.0	53	12.7	3.6	47	16.5	4.8	52
Total control group	...	...	..	32.6	10.2	64	...	..	..	16.3	4.4	66
Both schools combined												
Total exp. group	65.8	19.9	88	30.2	11.7	96	12.4	3.5	88	15.8	5.4	95
Total control group	...	...	..	30.5	9.8	127	...	..	..	17.0	4.9	128

* Total exp. group—all left-handed, ambidextrous, and shifted subjects.
Total control group—all strictly right handed subjects.
** Exp. and control groups are matched on the basis of I.Q.
*** All subjects who indicated any history of left-handedness or stuttering in their families.

differences between experimental and control groups are slight. Part I is a vocabulary test and Part II is a comprehension test. Certainly the differences between experimental and control groups on vocabulary and comprehension are entirely attributable to chance. In the Minnesota Speed of Reading Test the left-handed, ambidextrous, and shifted subjects are noticeably inferior to the group of right-handed controls. The formula for the significance of the difference between means yields a critical ratio of 2.61 sigma between the total experimental and control group at Edison High School. When these subjects are matched in intelligence the critical ratio is 2.00 sigma. Taking a group that in addition to being left-handed, ambidextrous, or shifted, also indicates some history of left-handedness or stuttering in their families, and comparing them with the total right-handed control group at Edison High School, the critical ratio becomes 2.71 sigma. In the Central High School subjects the right handers were slightly below the experimental group in speed of reading. When

the pupils of both schools are combined, the mean score for the total experimental group is 15.8 and for the control group 17.0. Here the critical ratio is 1.72 sigma, indicating that 96 times out of 100 one could expect the right handers to be superior on the Speed of Reading Test.

A further analysis of the reading scores, made by putting all the shifted subjects in one group, all the ambidextrous in another, and all the left-handed in a third, revealed no consistent differences between any of these three divisions.

The data show, therefore, that among high school seniors and college students, being shifted, ambidextrous, or left-handed is not accompanied by any significant inferiority on the Minnesota Reading Examination, but it does appear to be related to some inferiority on the Minnesota Speed of Reading Test.

Lacking definite information concerning the reading and laterality of the subjects of this experiment when they were beginning elementary school, one cannot say that they have outgrown an earlier difficulty. However, these left-handed, shifted, and ambidextrous subjects are equal to similar groups of right-handers in reading comprehension and vocabulary, and while they seem to be inferior in speed, one would hardly be justified, from the present experiment, in emphasizing handedness in a remedial reading program at the college level. The relation between handedness and speed of reading deserves further study.

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THE VALUE OF WRITTEN REPORTS IN DEMONSTRATIONAL TEACHING BEFORE COLLEGE CLASSES

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THE demonstration is a familiar device in college teaching. All the natural sciences use it in one form or another, and many of the social sciences as well. As a means of conveying first hand information quickly, cheaply and efficiently, it has had an ever increasing popularity. However, few opportunities have been offered for a systematic check upon its effectiveness as a teaching medium. The present report is concerned with pertinent facts as revealed in connection with the curricular reorganization of one college subject.

For the past five years the writer has experimented in the use of the demonstration in his general psychology classes. The fact that the same subject matter is taught in several independent sections made it possible to use "control" and "test" groups for a variety of different procedures. It was early revealed that classes having demonstrations showed no appreciable gain in information, as indicated by examination grades, over the control group, although interest in the subject was generally improved. In other words, a straight lecture was as efficient in teaching the principles of psychology as was a lecture accompanied by a desultory demonstration of some aspect of the subject. Because the demonstrations did make for a more objective attitude toward the subject, it was decided to continue in their development. Study showed that improvement was necessary in the demonstrations themselves before their effectiveness could be adequately evaluated. One single well-planned weekly demonstration by a skilled assistant replaced the brief and haphazard attempts of the regular instructor in connection with his daily lectures. This resulted in an improved respect for the scientific aspects of the subject, but students still failed to integrate the knowledge gained from the demonstration with their textbook study. Especially evident was the tendency to regard the demonstrations as interesting supplements unmarred by a check-up on the information gained.

As a test of the possible importance of the written report in demonstration teaching, a psychology section was offered in which additional college credit was given for such work. The student received a carefully planned outline manual of the demonstration experiments. Data were recorded in the manual; and results were analysed and discussed in connection with general and special readings. This procedure increased com-

prehension of the entire subject matter. However, since the test group was made up of those who had voluntarily elected to do the added work, there was a chance that the higher examination grades were caused by a preponderance of better and more serious students. Furthermore, it was not feasible to require anything like the amount of outside work done by the test group in connection with the regular three hour course. For this it was necessary to develop a more limited type of report.

As a test of the value of a brief written check-up in connection with group-demonstrations in psychology, two sections taught by the writer were used. Each section had about fifty students, and the groups were approximately equal in ability. The same manual material was given to each group. This contained brief descriptions of ten demonstration procedures, blank tables for inserting appropriate data, and pertinent discussion questions. The control group was simply instructed to read the manual material before each demonstration "so you will understand it better." The test group was told to record relevant data in class wherever a table was provided and to spend not more than fifteen minutes outside class in answering one of the discussion questions. These reports were collected weekly, but no grades were announced. The same amount of class time was spent on demonstrations with test and control groups. At the end of the semester both groups were given an unannounced examination of the recognition (true-false) type upon subject matter con-

TABLE I

SHOWING THE SCORES MADE IN RECOGNITION AND RECALL TESTS BY "REPORT" AND "CONTROL" GROUPS FOLLOWING DEMONSTRATIONAL TEACHING

	Average correct recognition score (perfect 100)	M.V.	Average correct recall score (perfect 100)	M.V.
Report Group	70	6.3	6.1	2.2
Control Group	34	7.8	2.7	1.4

veyed by way of demonstration. As seen in Table I, the group which had made the brief written report had an average score of 70 percent, whereas the average score of the control group was only 34 percent. As a further check, the groups were later asked to write "a sentence, word, or phrase which will specifically recall each of the demonstrations made in class this semester." Both groups gave the same average score of attempted identifications—7.8 out of a possible 10. The test group, however, had on the average of 6.1 correct identifications, with a range of 3 to 10, while the control group had an average of only 2.7 correct identifications, with a range of 0 to 5. A common error, especially on the part of the control

group, was lack of specificity in identification. Thus a demonstration on "judging character by facial features" would be reported as "something about personality." It is interesting to note that on the final examination, which bore no direct relation to the demonstrational material, the test group made slightly higher grades. Such results commend the use of the brief written report for increasing the effectiveness of demonstrational teaching in college classes.

EDITORIAL

TOWARD A MORE EXACT TERMINOLOGY

MINIMUM essentials for the development of any scientific field are: (1) a uniform and technical terminology through which to express concepts and to communicate information; (2) instruments and procedures for measurement and the gathering of data and evidence; (3) collection of specimens, exhibits, and documents whether in laboratories, museums, or libraries; and (4) competent workers to conduct investigations, organize knowledge, and disseminate information. The field of education has made progress in all four of these directions, and the need for a more exact nomenclature has seemed especially urgent within the past few years, since advances have been made in developing tools and techniques, in the formulation of a body of evidence, and in promoting the widespread consumption of research findings among the more than a million teachers of this country.

The problem of a more precise terminology involves more than the confusing use as synonyms of such terms as mark and grade, pupil and student, and curriculum, course, and program of studies. It includes clarification of vagueness in usage and technical educational connotations of such expressions as integration, articulation, activity, progressive, project, problem, and unit. The preparation of a comprehensive educational dictionary would do much to promote use of a vocabulary of increasing exactness and uniformity among school workers and writers in education; by so doing we could promote a common understanding of problems and facilitate accurate interchange of information and practice, even between different countries. In fact, many of the heated arguments and so-called controversial issues in education (and other areas) are more a matter of lack of clarification, including confusion in terminology, than to differences in underlying or fundamental principles and concepts.

Such fields as law and medicine, and more recently psychology, have made available comprehensive dictionaries in their respective areas. Small beginnings have been made in limited subdivisions of education

which will undoubtedly be helpful as the starting point for a more complete work. There is widespread interest in and general recognition of the need for a comprehensive dictionary of educational terms. A detailed plan for the project has been prepared and is described in the Official Report of the 1937 Meeting of the American Educational Research Association. The Research Association and the American Council on Education have been active in their interest in and support of the project. The problem at present is to secure the necessary financial support (presumably from professional organizations and educational foundations) for such an extensive study, which will undoubtedly require the assistance of a large number of workers and a period of several years for completion.

There is a possibility that at some future time the dictionary project may establish a working relationship with another important venture in which the American Council on Education is interested, namely, an encyclopedia of educational research that seeks to synthesize the results of scientific investigation in relation to educational theory and practice. Obviously, such an evaluation of research inevitably involves careful consideration of nomenclature and definition of terms.

Many readers of the *Journal of Educational Research*, because of their training, experience, and position, have already realized the need for an adequate educational dictionary and can do much to promote further development and support of the project, as well as play a definite part in the actual preparation of the work.

CARTER V. GOOD

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

LORENZ, JENNIE. *Consistency of Auditory Acuity or Variability of Individuals Among Four Tests with the 2A Audiometer* (Worcester: Heffernan Press, 1936), 162 pp. $1.50.

In addition to being a report on a specific bit of research, this document is a most comprehensive review of the development of audiometry together with an elaborate bibliography of the field. For those readers who wish to acquaint themselves with the work that has been done in the functional tests of hearing up to and including the work with the Western Electric 2A Audiometer, this study is to be especially recommended.

The experimental work done by Dr. Lorenz and reported on in this brochure was aimed at finding out how reliable audiometry is, that is, how large a part uncontrollable variables play in the determination of the hearing-loss for speech. The variables considered were: intelligence of the one tested, the weather at the time of the test, the emotional stability of the subject, his coöperativeness, his physical health, the condition of his ears, his speech condition, and his personality type.

The title of this article would suggest that one might learn from a study of Dr. Lorenz's results the reliability of a given reading on the audiometer. If one tests a child and finds that he has a 40 db. loss at 128 d.v., how likely is one to get that same result on retesting two weeks later? That question Dr. Lorenz does not answer, though her title seems to promise such an answer. She says that she is later to analyze her data to determine the reliability of audiometry on this basis, but, as yet, she has given us only the reliability of an *average* hearing-loss based upon three frequencies: 512, 1024, and 2048, with nothing at all about the consistency of tests of the other five frequencies tested by the W. E. 2A Audiometer. She reports that Robert C. Wingfield found that thresholds for the pitch of 1000 d. v. show greater consistency in audiometry than the thresholds for any other pitch between 250 d. v. and 2500 d. v. Since this point of 1000 d. v. comes almost in middle of the range considered by Dr. Lorenz, and since inconsistencies tend to be smoothed out by such averaging as she has done, it is possible, if not likely, that her figures of reliability are maximal, rather than minimal. We may say, from her results, only that hearing-losses for speech, figured as she figures them,—not hearing losses in general—are fairly reliably tested by the W.E. 2A Audiometer. Her results show that: "In the four successive tests of the same individual, the percentage of loss for speech tones proved to be highly consistent . . . The study of data on attendant atmospheric conditions and on personality characteristics shows no striking connection of any factor with consistency . . . Data on humidity, precipitation, and percentage of sunshine on days of testing suggest a possible relationship between greater re-

liability and a comparatively low moisture content in the atmosphere. Also, better acuity was shown in periods when the atmospheric pressure was low or rapidly changing, particularly when decreasing, but the number of cases in which such a change occurred is too small to warrant drawing any general conclusions here. On the whole, better acuity appeared to be connected with better consistency and with a shorter testing period . . . The four most consistent children had less history of ear disorders than the four least consistent. Uncertain, delayed, and false responses during testing appeared to be related to high variability among tests. Emotional poise, well controlled general activity, and a ready coöperativeness were in general characteristic of the more consistent individuals. Happiness, restlessness, interest in the outcome, and sometimes a heightening of emotion, when observed, apparently induced better auditory acuity."

We look forward to seeing the supplementary report showing the consistency of audiometry as analyzed on the basis of each and all frequencies that Dr. Lorenz tested.

ROBERT WEST

University of Wisconsin

LOUTTIT, C. M. *Clinical Psychology: A Handbook of Children's Behavior Problems* (New York: Harper & Brothers, 1936), pp. xx + 695. $3.50.

This text is a most satisfactory presentation of the theories, aims, and methods of clinical psychology. The author's treatment of his subject is inclusive, and his bibliography of forty-four pages covers a wide range. His illustrative case records, many of them of recent date from the files of the Indiana University Psychological Clinic, are well chosen.

Though a majority of those who must deal with the problems presented by individual children or adults are not clinical psychologists, but are parents, employers, teachers, physicians, psychiatrists, social workers, visiting teachers, probation officers, et. al., a majority of their problems involve psychological factors. Dr. Louttit's presentation of the facts and methods in regard to diagnosis and treatment of these problems will have important significance for all of these groups, as well as for the student psychoclinician, for whom it is a fundamental textbook. Training for such students in our departments of psychology has tended to overemphasize the significance of individual differences in intellectual capacity and development and to neglect the significance of the clinical history, the findings of the physician, the home background, and individual differences in personality and social reactions. A practical clinical psychology must have the more inclusive point of view and the wider training suggested in this outstanding book in this field.

FRANCIS N. MAXFIELD

Ohio State University

MANGOLD, GEORGE B. *Problems of Child Welfare* (New York: The Macmillan Company, 1936), pp. xvi + 549. $3.00.

In the third edition of his college textbook, Dr. Mangold attempts the impossible in that the full discussion of each topic which he includes would in itself, require at least one volume. In such a comprehensive survey, to introduce university students to the general field, the treatment must necessarily be superficial, and it is obvious from the bibliography as well as the text, that Professor Mangold has gathered diligently source material from a wide variety of documents including data to bring the third edition up to date wherever the basic material of the former editions has been superseded by more recent studies.

Although some direction of the thinking of students is essential to a textbook, this one seems somewhat redundant in the inclusion of interpretation by the author. In many cases the facts submitted do not warrant the conclusions which he draws from his own wider knowledge. Probably this is inevitable because of the lack of space in his single volume but the instructor who uses "Problems of Child Welfare" as a text should supplement the basic data and should use Professor Mangold's conclusions as a starting point for discussion rather than as definite conclusions.

HERBERT R. STOLZ
Assistant Superintendent of Schools, Oakland, California

HUNT, THELMA. *Measurement in Psychology* (New York: Prentice-Hall, Inc., 1936), pp. xx + 471. $3.00.

Psychological testing includes other techniques than short-answer questions. Though this is well known to psychologists, textbooks in the field of measurement have shown a tendency to over-emphasize the paper-and pencil examination, perhaps because of the current developments in this area. The author, who is an M.D. as well as a Ph.D., does sufficient justice to mental and achievement tests, but includes, as well, some of the physiological and chemical tests having a psychological significance in relation to fatigue, emotion, and mental disease.

The importance of accurate measurement in scientific work is emphasized throughout, and sample tests are chosen for rather complete description as representative of the different types of tests including those in the fields of art, music, mechanical aptitude, interests, efficiency, employee selection, social attributes, personality, and morality.

Selection of material for a college textbook always offers difficulties which the author seems to have met adequately, though it is unfortunate that the volume appeared just too soon to include an account of the new Stanford Revision of the Binet Scale; and one looks in vain for mention of Spearman, of the factor analysis technique, the Haggerty-Olson-Wickman Behavior Rating Schedule, and of the sleep disturbance apparatus used so effectively in the Payne fund motion picture inquiry. The author has also seen fit to omit material on statistical measurement.

The exposition is simple and clear, though it has a tendency to oversimplification at times, for example in the "is merely" type of explanation given of genius. And it is to be regretted that the oft repeated error again appears to the effect that "interest in the superior school child was much slower in development than interest in the sub-normal child," when school programs, honors, and preferment, even the schools themselves since the dawn of history have been provided almost exclusively for the superior. However, these are minor criticisms. In range and selection of material, and in clarity of exposition, as well as in appearance and format the book ranks high and should find wide acceptability.

WM. CLARK TROW
University of Michigan

JONES, LLOYD MEREDITH. *Factorial Analysis of Ability in Fundamental Motor Skills.* Contributions to Education No. 665 (New York: Bureau of Publications, Teachers College, Columbia University Press, 1935), pp. x + 100. $1.60.

The results of an experimental study on motor ability of 2094 college men are presented in a typical investigational monograph. The author reviews various early

studies of motor ability and points out the status of the two factor hypothesis in this field. He traces the development of factor theory in a brief but rather comprehensive way. In spite of low correlations existing between motor traits, the author contends that the "Theory of Two Factors" still remains a possible explanation at some levels of motor ability. He defines the purpose of the investigation as, "the attempt to analyze, by means of the 'Tetrad Difference Criterion,' the association of abilities in man as measured by tests in the fundamental skills usually employed in the physical education program for men at the college level."

The tests given included, (1) four measurements of anthropological traits, such as: age, height, weight, and the vital capacity, (2) measurements of five athletic skills, including: high jump, bar vault, rope climb of 20 feet, 176 yard run and baseball throw for accuracy. The reliabilities were reported as satisfactory, with one exception, that of the baseball throw.

Intercorrelations of from —.508 to +.520 were obtained although the author states that certain conditions desired for valid correlations such as rectilinearity, homoclisy and others were not always present. Most of the correlations were of the order of .10 or lower.

A very extensive study of tetrad differences was made and the results tabulated. The significance of the tetrad differences noted is given. It was found that most of the differences exceed four or five times the probable error of each. The general conclusion from all the data is that motor skills appear to be specific and do not show evidence of a common or "*g*" factor of skill in the population studied. The author does not claim to have disproved the presence of a central factor at all "levels" of motor ability but suggests that the approach to the measurement of skills of the type studied will likely have to be made by "specific" rather than by "general" tests, if his conclusions are found to hold for different populations. The most valuable part of the book for the busy reader will be the review of the literature and the general summary.

A. R. LAUER

Iowa State College

MONROE, WALTER S., and SHORES, LOUIS. *Bibliographies and Summaries in Education to July, 1935* (New York: The H. W. Wilson Company, 1936), pp. xiv + 470. $4.75.

CULVER, DOROTHY CAMPBELL. *Methodology of Social Science Research; A Bibliography* (Cambridge: Cambridge University Press, 1936), pp. x + 159. $2.00.

EELLS, WALTER C. *Surveys of American Higher Education* (New York: Carnegie Foundation for the Advancement of Teaching, 1937), pp. xii + 538.

The compilation by Monroe and Shores is a catalogue of more than 4000 annotated bibliographies and summaries in education, emphasizing the period from January 1, 1910, to July, 1935, listed under author and subject in one alphabet. The *Education Index* will keep the list up to date in the future. This extensive compilation of references is a natural outgrowth of earlier work at the University of Illinois under the direction of the senior author, including *Ten Years of Educational Research, 1918-1927*, and *Locating Educational Information in Published Sources* (1930). Graduate students, undergraduates, and others interested in educational literature will find the index under review a logical and valuable starting point, along with such a guide as Alexander's *How to Locate Educational*

Information and Data (Columbia University, 1935), for the compilation of a working bibliography on any educational subject.

Culver's bibliography covers research methodology in the social sciences (including references on the special fields of sociology, rural sociology, geography, education, economics, agricultural economics, politics and law, criminology, anthropology, and history), selection and definition of the problem, sources of material, collection of data, techniques for analysis and interpretation of data, and preparation of manuscript. The compilation is a convenient index to selected research references in the social studies field, an area with which educational workers should be better acquainted. Since the bibliography includes only a limited number of references applying directly to research methodology in education, workers interested in a more complete list in their own field will need to turn to such sources as Good, Barr, and Scates' *The Methodology of Educational Research* (Appleton-Century, 1936), and Barr and Rudisill's *An Annotated Bibliography on the Methodology of Scientific Research as Applied to Education* (University of Wisconsin, 1931).

Professor Eells states that during the past twenty-five years more than two hundred surveys covering the field of higher education have been made and published in the United States, and that several hundred other such surveys have been made but not published. Almost 1900 educational institutions, existing or defunct, have been covered more or less extensively by these surveys. The author's purpose was to make a critical analysis of all existing published surveys of higher education, to appraise their value in the specific situations for which they were designed, to evaluate their broader significance in developing the science of higher education, and from such an analysis and appraisal to discover important trends and to develop desirable standards for the improvement of such surveys in the future. The method of the study was primarily a detailed examination of the survey reports themselves, supplemented by library data, interviews, judgments of survey experts, and correspondence. The analysis involved personal examination of all of the 230 printed reports, two-thirds of the 70 mimeographed reports, and a small portion of the nearly 300 surveys in manuscript form. The various chapters cover surveys of higher education in terms of: definition and classification, historical development, general analysis, techniques, methods of presentation, contents of reports, results, thirty outstanding surveys, improvement, institutions included in surveys, agencies making surveys, staff members, costs and sources of funds, opinions concerning future trends, bibliography on surveys, reference list of surveys, and topical index to contents of survey reports. The survey movement is now well covered by the volume under review and by Caswell's *City School Surveys* (Columbia University, 1929), Sears' *The School Survey* (Houghton Mifflin, 1925), Eaton and Harrison's *A Bibliography of Social Surveys* (Russell Sage Foundation, 1931), and the Indiana University bulletins—*Bibliography of School Surveys and of References on School Surveys* (1931) and *Topical Analysis of 234 School Surveys* (1927).

CARTER V. GOOD
University of Cincinnati

SLESINGER, ZALMEN. *Education and The Class Struggle: A Critical Examination of the Liberal Educator's Program for Social Reconstruction* (New York: Covici-Friede, 1937), pp. vii + 312. $3.00.

This is an argument against the liberal educator's program for social reform and in favor of the Marxian program. The author first sets forth the liberal educator's program quoting exclusively from three books by two authors—Counts and Kilpatrick—and from a report of a committee of the Progressive Education Association. In spite of this extremely narrow range of literature drawn upon for this section, the reader will recognize the exposition as a fair presentation of the typical program of liberals. The liberal educator strongly condemns the working of the profit system, and the wastes, the harshness, and the lack of socialmindedness of the capitalist order. But he believes that capitalism can be reformed and democratized, and that we can achieve through enlightenment the abundance for all which modern technological developments make possible, as well as tolerance and good will, without destruction of our historic institutions. Against this optimism of the liberal Dr. Slesinger throws "The Marxian challenge." The Marxian believes that the chasm between the propertied class and the non-propertied is essentially an impassible one. The conflict of interest between these two classes is not an accidental one to be smoothed out by an introduction of the two to each other, but is a fundamental one, far more fundamental than either of the two classes in America yet perceive. In a series of very persuasive chapters, Dr. Slesinger attempts to show that our economy is a class economy, our state is a class state, and our culture a class culture. In all these areas it is the propertied class in whose interests our institutions have been set up; and our constitution, our courts, and the whole machinery of the states are structured for guarding their property rights. Although the dominant class may yield a little now and then, because it is expedient for their interest in the long run or in order to forestall revolution, its members have no intention to yield their superior privileges and it is simplemindedness on the part of liberals to believe that any amount of persuasion or of enlightenment would ever induce them to do so. Force is the only thing that will induce them to relax their strangle hold upon society. The way *beyond* is a truly democratic way, but *the transition* cannot be by democratic methods. "Democracy itself has never been established by democratic methods" (p. 295-6).

Hence it must be the function of the educator to increase class consciousness. The education needed is "an education which seeks to capitalize social discontent for revolutionary purposes; which aims, through emotionalized appeals as well as through the promotion of intelligence, to arouse class antagonisms, with the hope that the masses thus made conscious of their present exploitation will move to do the only intelligent thing, namely, to attempt to overthrow the present order . . . This means that we must sentimentalize, symbolize and sloganize the needs and the means for the abolition of our class society. The molders of the minds of the masses must assume the role of the propagandist, the political strategist, using whatever techniques may be effective in convincing and in converting the minds of the masses as speedily and as effectively as possible." (p. 293)

But Dr. Slesinger does not believe that the public schools can help much in this; for schools have always been, and perhaps must be, agencies of the social order which directs and supports them. The educators upon whom he calls to bring in the new social order are "the writer, the journalist, the lecturer, the artist, the labor leader . . . " (p. 293)

The reviewer believes that this book makes a very valuable contribution to

the literature of education and social reform. Its author is no crackpot; its exposition is restrained and forceful and is supported by large masses of evidently valid statistics. The manuscript was presented as a Ph.D. dissertation at Teachers College, Columbia University, and was accepted by a committee made up chiefly of the liberal educators against whom the argument was directed. There pervades the book a frankness and a realism to which it is hard for us soft-hearted liberals to adjust ourselves, as when the author states (in apparently characteristic Marxian style) that we should fight for maintenance of our civic rights so long as we are in the minority, but should not stand ready to guarantee these rights to the propertied class when to do so would endanger the ascent of the masses to power (p. 292). But, disquieting as this persuasive presentation is, it is a needed antidote to the shallow optimism and wishful thinking in which many of us indulge. The hypothesis of reform only through revolution is certainly one worth considering, and one with the plausibility of which every liberal educator should be fully acquainted, along with the hypothesis of gradualism within the framework of institutions that remain democratic in transition as well as in ultimate functioning. And the reviewer knows of no other book in which this alternative is as fully, as clearly, and as fairly put as in this one by Dr. Slesinger.

C. C. PETERS
Pennsylvania State College

WILLIAMSON, E. G., and DARLEY, J. G. *Student Personnel Work: An Outline of Clinical Procedures* (New York: McGraw-Hill Book Company, Inc., 1937), pp. xxiv + 313. $3.00.

This book is an addition to the many pleas on behalf of the individualization of education which are pouring from the press. The patterns here recommended for achieving this are drawn in terms of college personnel work, but the authors assert that they are equally pertinent to secondary schools.

The first two chapters are devoted to a presentation of the point of view which is now familiar to most educators: that the objective of education should be to help each individual develop to the highest possible degree in all respects. The authors lay down ten principles of personnel work'' as fundamental to the attainment of this objective. They maintain that the indispensable feature of personnel work is the ''clinical method,'' involving a complete analysis of each individual from all points of view, by all available means (though they warn that some means are but imperfectly developed). After analysis and diagnosis, come prognosis and treatment. Over all lies preventive work.

Most of the book is devoted to a description of the testing bureau and the counseling program in operation at the University of Minnesota, where the authors are employed. A chapter of sixteen pages is filled with illustrative case histories. Another helpful section gives an analysis of costs which were, on the average, $7.43 per case. (12.51 man hours). Another chapter describes the steps taken to measure the effectiveness of the advisement at the Minnesota institution. One year or more after the initial contact, 196 students were followed up. The number who felt that they had made a satisfactory occupational choice was 142 (72 percent). Of the 159 cases who followed advice either wholly or in part, 87 percent were classified as having made a satisfactory adjustment. Of the 37 cases not following advice, only three had made a satisfactory adjustment. Students who followed recommendations in-

creased their average scholarship significantly. Cautioning the reader against drawing hasty conclusions from these limited data, the authors promise to publish a future report of more extended investigations on this point.

The Appendix contains lists of the tests and forms used at the Minnesota Testing Bureau. There is a bibliography of 182 items and an index.

The book suffers from the limitations inevitably attending the description of a project carried out at a single institution. The patterns laid down, while possibly applicable at the University of Minnesota, could not, and possibly should not be followed exactly at another institution. Some of the most important aspects of personnel work are not dealt with or are insufficiently treated. Thus there is no systematic discussion of placement, housing, administration of loans and scholarship, or of records (though some forms are reproduced). One misses also a discussion of group techniques used in orientation and in teaching the course in Occupations. In an introduction, Professor Donald Paterson acknowledges such omissions and points out that the book is "not a systematic treatise covering all phases of student personnel work." This does not denote, he says, that the authors regard the missing areas as unimportant. It merely represents their absorption in the narrower techniques used in analyzing the individual. In view of this self-imposed limitation, possibly the book should have had a less comprehensive and promising title.

Some readers will take issue with Professor Paterson's statement to the effect that "student personnel work is gradually supplanting vocational guidance." Most persons regard vocational guidance as only one phase of personnel work, but they would not admit that it is being given up, or that the terms are synonymous. The difficulty probably lies in Professor Paterson's identification of vocational guidance with "guidance," which he then regards as synonymous with personnel work. This latter identification will also not be acceptable to some readers.

Read in the light of these restrictions, the book nevertheless will give a good idea of a whole-hearted attempt made by one institution to help students individually to adjust themselves to a particular state university. It should help college officers everywhere who are trying to do this and it should stimulate those who are not yet converted, to take the necessary steps.

HARRY D. KITSON
Teachers College, Columbia University

KNUDSEN, CHARLES W., AND MCAFEE, LUCIUS O. *An Introduction to Teaching* (New York: Doubleday, Doran & Company, 1936), pp. xvi + 424. $2.00.

The authors of this volume feel that too many introductory books are based on the false assumption that students have already chosen a teaching career. Hence content is addressed to teachers rather than to prospective teachers. In order to avoid this error the present authors have aimed primarily at students who are trying to choose a career field. They have prepared a well written, well organized, straightforward summary of material which they sincerely believe will serve this group.

There are seventeen chapters divided among five units or parts. The latter are: I. The Teacher and the Teacher's Work; II. The Extrinsic Rewards of Teaching; III. Factors in Supply of Teachers and Demand for their Services; IV. Preparation for Teaching; V. The Ethical Obligations of the Teacher. The chapter heads are similar to those found in earlier books on "problems of the teaching professions" or in more advanced books on

"problems of teacher personnel." Each chapter has an adequate succinct summary. There are no problems or exercises. Bibliographies are extremely brief. No great proportion of recently dated references seems included though this may be due to an actual lack of recent studies on some of the topics.

A number of weaknesses are apparent though they are outweighed by the strong points. The most serious weakness is the thoroughly superficial treatment of personality. This consists of a summary of the mechanistic trait-analysis point of view, without a single reference to the vitally important and rapidly growing organismic literature. The word "integration" does not appear in the index. The absurd contradictory ranking of personality traits for different types of teachers found in the Commonwealth Teacher-training Study is reproduced (pages 235-6) with evident approval. It is seven years past since the late Professor Bonser poked gleeful satire at the nonsense in these ratings.

Secondly the reviewer sincerely doubts that students should, or even can be, "introduced" to *teaching* before, or without being, "introduced" to *education*. Two or three introductory chapters would have covered this fundamental point.

An extremely trivial inconsistency is to be noted in the otherwise excellent treatment (Ch. XVII) of the teachers obligations to professional organizations. This opens with an intelligently critical analysis of the work of various professional groups and properly advises the student to use his judgment in deciding which to support and which not. Then (page 408) it is stated that the teacher is obligated to support his state teachers association. There are still a few states in which the state association is the private property of a clique which passes the paying offices around "among the boys," avoids any constructive educational work, and regularly sells the teachers down the political river. In certain specific states the only obligation the teacher should have to the state association is to thoroughly wreck it and build a new one on the smoking ruins.

Other minor matters are that some topics are treated with extreme brevity and that the material while excellently well discussed is still purely factual and thus will be difficult to teach.

The greatest point of strength is the unusually excellent writing. The whole body of material is presented in clear, lucid style, admirably adapted to the understanding and background of the type of students for whom it is designed. The organization of the book is equally well done, being logical and coherent throughout.

Though the bibliographies are brief the body of the chapters is documented with exceptional care. Every important statement is adequately backed with clear and concise footnotes.

Two of the discussions are worthy of special note. The difficult topic of the teachers ethical obligations (Ch. XV) and the relatively simple one on obtaining a position to teach (Ch. XVI) are admirably well done. The original and very sloppy N. E. A. code of ethics is briefly but adequately criticised and later efforts commended. The whole discussion of this abstract problem is adapted with unusual skill to the type of thinking likely to be done by young students. The advice on obtaining positions, an important matter with beginners, is up to date, sensible, and extremely helpful.

The reviewer sincerely doubts that the author's expectations as to use as a text will be justified by the volume. There are twenty-six competing texts. The present volume treats its selected topics in far more adquate detail than all but one of

the twenty-six but is confined to a very small field. It could be used as a text only in a one hour "exploratory" or "guidance" course. As a supplement, however, to practically all other texts, it should find wide and important use. As a summary of its selected field it is easily one of the two best now available.

WILLIAM H. BURTON
University of Southern California

SHAFFER, LAURANCE FREDERIC. *The Psychology of Adjustment: An Objective Approach to Mental Hygiene* (New York: Houghton Mifflin Company, 1936), pp. xix + 600. $3.00.

Among the recent books on mental hygiene *The Psychology of Adjustment* appears to be as comprehensive and as scientific as any. The difficulty with this book, as with most others, probably can be ascribed to the lack of subject matter in the field of mental hygiene. The author devotes a good deal of space, for example, to emphasizing the need for scientific study of behavior and to an evaluation of scientific methods. This method of introducing the subject of mental hygiene is a carry-over from the methods employed by earlier writers of textbooks of psychology who utilized a good deal of space which should have been devoted to the field of psychology to a discussion of scientific method and a defense of psychology as a science.

An important problem which confronts the reader and which probably may confuse the uninitiated is that which relates to the meaning of mental hygiene. Is the subject matter of mental hygiene to be considered as an explanation of human behavior or should it be defined in terms of those processes which may lead to abnormal conduct? Obviously the author of this book is somewhat undecided. He attempts to imply that human behavior can be explained on the basis of psychological principles already established. It is evident, however, that the overemphasis on the "scientific method" may be an evasion (and appropriately enough) of a discussion of deviant behavior. It seems likely that much further experience is necessary in the study of mental deviations before one may speak authoritatively on mental hygiene as a method of preventing abnormalities.

The book is written in excellent style and is accurately and completely documented. It is refreshing to see a book which does not contain platitudinous statements and superficialities regarding "self mastery" which so many of the recent books on mental hygiene contain. It is to be recommended highly and unequivocally for university students. The only criticism that might be made is the attempt to explain too many behavior characteristics on the basis of inherent drives. The author emphasizes, however, the differences between the interpretation of instincts made by psychologists in times past and the motivating influence of drives as socially determined processes.

The book is well-organized and should make a good text for college courses on personality or mental hygiene.

MANDEL SHERMAN
University of Chicago

WECHSLER, DAVID. *The Range of Human Capacities* (Baltimore: Williams and Wilkins Company, 1935), pp. ix + 159. $2.50.

This interesting book attempts to, "summarize our knowledge regarding individual differences, more specifically those aspects . . . which bear on the limits and range of human capacities, and to draw such inferences from the data available as the facts seem to warrant."

Being a summary, the treatise contains much that is not new. However, the presentation is excellent.

After the introductory chapter, there is a good discussion of the well-known difficulties which are involved in measuring human beings, especially when we try to measure those traits which are called mental.

The third chapter deals with the facts and theories concerning the distribution of human traits and abilities. The author states that we have no conclusive data on the problem, but believes from his examination of many distributions that, "Excepting the linear measurements, the distributions of most traits and abilities are definitely asymmetrical or non-Gaussian." This, as he points out, is contrary to the theory expressed in the text. He does not point out, however, the fairly obvious fact that the traits which do not appear to give normal distributions are just those traits which present the greatest difficulties when we attempt to measure them. They are the traits for which the zero points and units are not satisfactorily determined. It is altogether possible that when the proper measuring rod is applied, the resulting measurement will fit a Gaussian curve as well as a height distribution does now.

In Chapters IV and V we find some new ideas. The author proposes to measure the spread of capacities by what he calls the *total range ratio*. This ratio is obtained by dividing the measure of the 999th individual per thousand by the measure of the 2nd individual per thousand. Rejecting the top and bottom cases (0.2 percent) is justified on the basis that this percentage constitutes the pathological or abnormal group, and should not be considered in studying the normal range of ability. Here an interesting set of questions may be raised. If we want the facts about range must we not consider the total range and not some selected part of it? If we decide in favor of selection, is 0.2 the right percentage to reject? Why not reject 4 or 6 per 1000 as abnormal? In the light of what the author believes about the asymmetry of distributions, would he not have been more consistent if he had dropped one individual from one end and two from the other? Well, nobody knows all the answers. Dr. Wechsler makes a good argument for his procedure, so let us see where it leads him, remembering that he could have made a good argument for some other procedure which might lead him somewhere else.

A collection of *total range ratios* shows that they vary from 1.03: 1 to 3.63: 1, or from 1.16: 1 to 2.93: 1 if we omit the special cases of body temperature, hard learning, and weight of suprarenals (one at the low end and two at the high end this time). When distributed, the ratios fall into a quadrimodal distribution, indicating a sort of hierarchy, and their average is about 2:1. The author had thought that he might find the upper limit of variability identical with the logarithmic constant, $e = 2.7182$. Although this does not turn out to be true it is interesting that among the 72 ratios collected only five are greater than 2,718:1, and only two exceed 3.0:1. This seems to indicate that there is a biologically determined limit of variability, excepting the pathological variations, which is somewhere below three to one. Thus the differences among the normal portion of humanity are not so great after all.

In the author's own words his conclusions are: "(1) The range of human capacities when calculated in true units of amount, is exceedingly small. (2) There are calculable limits to human variability which very probably are biologically determined. (3) These limits partake of the characteristics of natural constants."

Obviously, these conclusions are important if true. They are also important if untrue, because it will take extensive investigation and hard thinking to prove their falsity.

In the chapter entitled, "The Burden of Age" the author discusses the growth and decline of abilities. Here, too, are some important conclusions; Maximum native capacities are attained early, and decline begins at about 25. There is slight but appreciable decline from 25 to 40, and there is no evidence whatever that the everage man maintains his vigor unimpaired beyond 50. Intellectual capacity begins to decline rather earlier than psysical capacity.

There is an interesting chapter on exceptions, which deals with the two-per-thousand individuals outside the normal range of variation. Another chapter is concerned with some of the problems of genius and deficiency, and finally come a discussion of the meaning of differences. One appendix discusses in detail the problems of measuring a mental ability, and another gives pertinent data. There is a good bibliography.

The book is well-written and stimulating. What effect the proposal of the new method of studying variability will have cannot be foretold. Many investigators will still insist that units of variability are the best measures. Others will prefer isochrons, and still others will continue to search for "absolute" units and zero points. Some, like the reviewer, will incline to the belief that for practical purposes of school and clinic nothing is likely to surpass the natural time or age units. But what ever his present ideas and preferences may be, no one who is interested in the problem of measuring human capacities can afford to miss reading this challenging book.

EDWARD A. LINCOLN
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DRAPER, EDGAR MARION. *Principles and Techniques of Curriculum Making* (New York: D. Appleton-Century Company, 1936), pp. xv + 875. $3.25.

This comprehensive and detailed treatment of the principles and techniques of curriculum making by Draper should be of interest and value to all persons concerned with teaching and improvement of the curriculum in elementary and secondary schools and in colleges and universities. The book should be especially helpful to persons engaged in intensive curriculum programs because so many examples of different phases of curriculum work from outstanding city courses of study are presented, not to be copied but to be suggestive of a wide variety of possibilities.

After a brief introduction, much attention is given to the determination of educational objectives from primary and secondary courses and to organizing objectives for course of study construction. Half the book deals with various kinds of units of work and with procedures, materials, and measurement of results in connection with teaching units of work. The last two chapters of the book deal with the administration and organization of courses of study.

More attention might have been given to advantage to influences outside the school on the curriculum, recent trends toward correlation and integration, grade placement, and recent *state* curriculum programs. This could have been done by giving less space to some of the topics treated.

Various practices, possible procedures, differing points of view, and desirable criteria for various phases of curriculum building are stated adequately and clearly. Throughout the book it seems apparent that the author's point of view lies between the extremes. The author ap-

parently believes in bringing practices of schools in general up to those of the practices of outstanding schools and to make progress beyond that in an orderly gradual manner. The need for adequate measures of the important less tangible outcomes of teaching is stressed. The desirability of utilizing research findings and of conducting a greater amount of systematic experimentation and research in curriculum work is advocated.

Some of the points of view set forth by the author in various chapters, especially the chapter on relating curricula to life, seem to be well in advance of the practices exemplified in the quotations from outstanding courses of study. This is desirable because the goals should continually be set in advance of best practice as a stimulus to continuous improvement.

O. I. FREDERICK
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TAYLOR, EARL A. *Controlled Reading: A Correlation of Diagnostic, Teaching, and Corrective Techniques* (Chicago: The University of Chicago Press, 1937), pp. xxviii + 367. $3.50.

The last decade has seen marked progress in diagnostic and remedial reading. New treatises or manuals on the subject continue to appear. The present book goes somewhat beyond the ordinary text on disabilities. Considerable emphasis is placed upon source materials and development of techniques in addition to measurement for diagnosis and treatment.

In Part I are given the bibliographies on reading and the pictures of individuals who have led in reading research. This section will be found useful to the student, the teacher, and the research worker.

Part II includes a comprehensive historical sketch of techniques for the study of eye movements in reading. Photographs of the apparatus and illustrative records are given. This section is the most complete thing of its kind in the literature.

The Metron-O-Scope and its use are described in Part III. This apparatus is a mechanically operated, triple-shutter tachistoscope, designed to condition rhythmical left-to-right eye movements and accurate return sweeps while such moves are coördinated with the interpretative processes of reading.

In Part IV are described the experiments which constitute the author's Ph.D. dissertation. Some of the results follow: Comparison of normal with failing students revealed stable differences in favor of the normal in eye fixations and reading comprehension. Unfortunately, the groups were not matched for intellectual aptitude. Comparison of the two groups for adequate functioning of the visual mechanism (visual acuity, phoria, stereopsis, fusion) revealed small differences in favor of the normals, most of which are called highly reliable by the author although they fall short of the ratio usually accepted as indication of a reliable difference. Inference that there is a causal relation between the two variables should be made with great caution.

Two matched groups were compared for progress in reading when all subjects were instructed to read as rapidly as possible, to avoid regressions if possible and to attempt to read with not more than three fixations per line. One group used mimeographed material and the other read from the Metron-O-Scope. Both groups improved significantly in performance and by a similar amount. Retention after one month was slightly in favor of the Metron-O-Scope group, but not reliably so. The author considers that the Metron-O-Scope technique to be more effective. It is true that this method yields more rhythmical eye movements (i. e., fewer regressions) but the most adequate eye movement measure is fre-

quency of fixations and the two groups are indistinguishable on this basis.

Employing prism training for fusion in conjunction with Metron-O-Scope reading resulted in improved reading status. Whether both or only one phase of the technique is essential cannot be deduced since they were used together.

Certain distinct contributions are made in this book: (1) Binocular photographs of eye movements emphasize the degree of coördination of the eyes during reading and other visual acts. While this fact has been known, Taylor points out its application to certain types of disabled readers and its possible use by optometrists and oculists as well as by the clinical psychologist. (2) The use of a new apparatus for the reading clinic, the Metron-O-Scope, is fully explained. While it does not appear to add greatly to results obtained by other means, the reviewer considers that it may be fully justified as a motivating device in remedial programs. A simpler and less expensive model might find wide usage. (3) The historical sketch on methods and contributors is unique. (4) The approach which coördinates the work of optometrists and oculists on the one hand and psychologists and educationalists on the other is commendable. The book is bound to hold its place for some time as an important contribution to diagnostic and remedial reading.

MILES A. TINKER
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SKINNER, CHARLES E., Editor in collaboration with BUSWELL, G. T., COREY, STEPHEN M., etc. *Readings in Educational Psychology* (New York: Farrar & Rinehart, Inc., 1937), pp. viii + 630. $2.25.

This volume of supplementary reading material in educational psychology represents the work of twenty-six editors, each responsible for his particular chapter. The reputation of these men is sufficient guarantee that the material has been carefully selected, and the reader, no matter what his background, should find it stimulating to sample so wide a variety of offerings.

Although variety rather than synthesis is the strength of such a work, this book is not wholly lacking in a point of view. It recognizes a number of tendencies which appear to be operating in current educational psychology: (1) a tendency away from the emphasis on heredity in general and on instincts in particular, (2) less attention to the conventional laws of learning, (3) less stress on the purely psychological and more on the educational aspects of the subject, (4) greater emphasis on the topic of growth, (5) more attention to motivation and adjustment, (6) an effort to apply psychological principles to the work of the classroom.

There is some overlapping of topics in the various chapters, but this is inevitable when so great a mass of material is assembled by the collaboration of so many editors. Moreover, topics so closely allied as "Learning and Principles of Habit Formation" and "Acquisition of Skills" must necessarily draw material from common sources.

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RESEARCH ABSTRACTS and BIBLIOGRAPHIES

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

Annual List of the Research Activities of the Members of the Ohio Education Association, Bulletin of the Ohio Educational Research Department of the Ohio Education Association (Columbus: Ohio Education Association, October, 1937), 23 pp.

This booklet contains a summary of the research investigations carried on by members of the Educational Research Department of the Ohio Education Association during the year, 1936-1937.

CONWAY, CLIFFORD B. *The Hearing Abilities of Children in Toronto Public Schools*, Bulletin of the Department of Educational Research, No. 9 (Toronto: Department of Educational Research, Ontario College of Education, 1937), 132 pp.

This is a report of the study made to determine the number of hard-of-hearing children in the ordinary classes of Toronto public schools. Discussions deal with the nature of the problem; the importance of hearing; the mechanism of hearing; the sensitivity of the ear; the testing of hearing; the audiometric survey; a group test of hearing; factors influencing hearing; and summary and recommendations. Bibliography.

ELLIOTT, EUGENE B. *What Does Research Say?* Bulletin of the State of Michigan Department of Public Instruction, No. 308 (Lansing: Department of Public Instruction, 1937), 146 pp.

This bulletin contains a discussion of the findings of research and experimental practice as they apply to elementary schools. Topics treated are: child development; individual differences; personal and social relationships; materials of instruction; methods of instruction; records and reports; classification and promotion of pupils; arithmetic; expression; the arts; health, physical and safety education; reading and literature; science; social studies; education for character; activity programs.

ENGELHART, MAX D. *Report on the June, 1937 and September, 1937 Comprehensive Examinations and the September, 1937 Exemption Tests of the Chicago City Junior Colleges* (Chicago: Chicago City Junior Colleges, 1937), 23 pp.

The results of the comprehensive and exemption examinations for June and September, 1937 are discussed in this bulletin.

Federal Support for Education: The Issues and the Facts, Research Bulletin of the National Education Association, XV, No. 4 (Washington: National Education Association, September, 1937), 29 pp.

This bulletin contains discussions on inequalities of educational opportunity; economic ability of the states to support

schools; the size of the educational task; the declining birth-rate; migration from farms; growth in corporate ownership of wealth; efforts required to support an adequate school program; improvement of state tax systems; school costs and other expenditures; the incidence of federal taxation; mobility of population; and questions on federal aid.

LITTLE, MARTIN EBERT. *A Study of the Eighth Grade Diploma Situation in Kansas*, Bulletin of the Kansas State Teachers College of Emporia, XVII, No. 6 (Emporia: Kansas State Teachers College, June, 1937), 37 pp.

A survey of the problem of promotions from eighth grade to high school in Kansas. On the basis of this survey the author makes certain recommendations such as: teacher qualifications should be raised; state should consolidate many of our rural schools; achievement tests might well be given; and supervisors should be added to improve the instruction. Bibliography.

Mathematics for Elementary Schools, University of the State of New York Bulletin No. 1113 (Albany: University of the State of New York Press, April 1, 1937), 192 pp.

This syllabus presents the arithmetic curriculum for elementary schools in the State of New York, and is designed to help the teacher adapt mathematical instruction to the needs of individual pupils through application of the principle of social utility. Aids for teachers; the development of mathematical learning; the mathematical experiences of children; adaptations to different types of school organization and an annotated bibliography are included.

SANDIFORD, PETER, CAMERON, M. A., CONWAY, C. B., LONG, J. A. *Forecasting Teaching Ability*, Bulletin of the Department of Educational Research, No. 8 (Toronto: Department of Educational Research, University of Toronto, 1937), 93 pp.

A report of the committee studying the problem of teaching ability with the end in view of establishing some fair and adequate method of restricting the number of student-teachers in attendance at the training institutions. No significant results were found. Bibliography.

Theses in Education, Bulletin of the Bureau of School Service, College of Education, University of Kentucky, X, No. 1 (Lexington: University of Kentucky, September, 1937), 29 pp.

This supplement makes available abstracts of all graduate theses in Education presented at the University of Kentucky to January 1, 1937.

THOMAS, M. E. *The Efficacy of Broadcasts to Schools*, Bulletin of the Australian Council for Educational Research, No. 48 (Melbourne: Melbourne University Press, 1937), 48 pp.

The results of an experiment to determine whether the broadcast lesson is a more effective means of instruction than the ordinary oral information lesson are contained in this report. The author finds that there is no significant difference between the effectiveness of broadcast lessons and oral lessons in English, Nature Study, Arithmetic and History. Method, sex differences, significance of age and grade, the story, are treated as subsidiary problems.

TORGERSON, T. L., AND HELLFRITZSCH, ALVIN. *Report of the 1937 Wisconsin Achievement Testing Program* (Mad-

ison: School of Education and the Bureau of Records and Guidance, September 24, 1937), 28 pp.

Report of the Wisconsin Achievement Testing Program (1937) including tests in Algebra, Geometry, General Science, Biology, Physics, American History, and Language Usage Tests, Fact-Theory Test in Science, Cause-Relationship Test in Science, and Controlled Experimentation Test in Science. Frequency distributions, mean part-scores; mean total-scores; mean, median, and quartile scores; standard deviations; percentile norms; and T-Score norms are given.

Twenty-fourth Annual Conference on Educational Measurements, Bulletin of the School of Education, Indiana University, XIII, No. 4 (Bloomington: Bureau of Coöperative Research, Indiana University School of Education, September, 1937), 100 pp.

Compilation of speeches given at the Twenty-fourth Annual Conference on Education Measurements held at Indiana University, April 16 and 17, 1937. Discussions deal with the content of a course in the introduction to education; the reorganization of local school districts in Ohio; report on NYA school aid activities; some experiments in teaching German vocabulary; some trends in educational measurement; constitutional tax limitations and their influence on education in Ohio; progress toward a science of Education; an analysis of efficiency in addition; and the superintendent's appraisal of teacher candidates. Bibliographies.

PSYCHOLOGY OF LEARNING AND TEACHING

GRINNELL, J. ERLE. "What Makes Ability in English?", *The School Review*, XLV (October, 1937), pp. 602-604.

The author concludes that vocabulary knowledge shows a much closer relation with intelligence than with achievement in English.

JOHNSON, WENDELL, AND HOUSE, ENOS. "Certain Laterality Characteristics of Children with Articulatory Disorders," *The Elementary School Journal*, XXXVIII (September, 1937), pp. 52-58.

The authors studied forty-one speech cases with severe functional articulatory defects and conclude that handedness, as measured by an adaptation of the Van Riper simultaneous vertical writing test, tends to be related to severe functional articulatory defects.

ROBINSON, HELEN M. "The Study of Disabilities in Reading," *The Elementary School Journal*, XXXVIII (September, 1937), pp. 15-28.

This article describes the methods of investigating reading difficulties as used in the Orthogenic School of the University of Chicago; and gives an analysis of the causes or conditions of these defects and the discovery of methods of treatment.

TURNEY, AUSTIN H., AND FEE, MARY. "Teaching High-School English as an Insightful Process," *The School Review*, XLV (October, 1937), pp. 605-611.

The authors discuss the Gestalt term 'insight' and the Spearman factor 'g' as they apply in the field of English, and conclude that development in English can be an insightful process and that optimum development for each child must result in a high relation between an index of individual difference in 'g' and achievement.

CURRICULUM

DAY, L. C. "Local Opportunity and Knowledge of Current Events," *The Elementary School Journal*, XXXVIII (September, 1937), pp. 44-51.

This study is based on the results of a knowledge of current-events test given to nearly 5,000 pupils in seven schools. The author concludes that in general, the larger the community the better the knowledge of current-events possessed by its pupils.

HAUGEN, MELVIN, AND DOUGLASS, HARL R. "The Effect of a Course in Occupations on the Vocational and Educational Plans of Ninth-Grade Children," *The School Review*, XLV (October, 1937), pp. 585-591.

A study of 388 ninth grade pupils in two junior high schools in Minneapolis who were enrolled in a course in occupations. There was a marked increase in the percentage of pupils who arrived at a decision with respect to the high-school curriculum which they wished to follow and a slight increase in the number planning to go to college.

TURNER, CLAUDE F. "What Need for Mathematics in Grade VIII?", *The School Review*, XLV (October, 1937), pp. 592-601.

An attempt to determine what mathematics functions in the daily school and out-of-school life of eighth-grade pupils. The author concludes that emphasis should be placed on the mathematics needed in school and life situations in order that satisfactory progress result.

NEW TESTS

ENGELHART, MAX D., AND OTHERS. *Chicago City Junior Colleges Comprehensive Examination in a) English, b) Biological Science, c) Humanities, d) Physical Science, e) Social Science.*

Comprehensive examinations which have been prepared by the Department of Examinations, of the Chicago City Junior Colleges, are both objective and essay in character, and measure achievement in the various fields.

STONE, CLARENCE R. *Stone-Webster Test in Beginning Reading*, Forms 1 and 2, St. Louis: Webster Publishing Company, 1936.

This test is designed to provide an adequate sampling of the words most commonly appearing in pre-primers, primers, easy first readers and beginning work-books. Test includes both word recognition and sentences. Manual contains table of age and grade medians, and percentile scores. Forms are of equal difficulty.

MEASUREMENTS, STATISTICS, AND SCIENTIFIC TECHNIQUES

DUEL, HENRY W. "Measurable Outcomes of Laboratory Work in Science: A Review of Experimental Investigations," *School Science and Mathematics*, XXXVII (October, 1937), pp. 795-810.

The author reviews the experimental studies with respect to the outcomes of laboratory work both at the secondary school and at the college level, and concludes that the findings render questionable the present extensive use of the individual laboratory method in the teaching of science.

RESEARCH NEWS and COMMUNICATIONS

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Guidance in Secondary Schools.—An investigation of the outcomes of guidance in secondary schools, under the direction of G. N. Kefauver and H. C. Hand of Stanford University, has involved three major phases. The first step consisted of an analysis of the literature on guidance, identifying the objectives of guidance service. Obviously, if an attempt should be made to ascertain the extent to which guidance objectives are being realized, one must first define somewhat clearly the nature of those objectives. The importance which is attached to these objectives represents one aspect of this study. The investigators have already reported in magazine articles some of the outcomes of this first step of the program.

The second major section of the investigation involved the construction of tests and inventories designed to secure information on the extent to which guidance objectives were being realized. These tests and inventories were administered to a sampling of the pupils in the eleventh and eighth grades in eight cities. The status of this sampling of pupils on these measures, when related to the emphases in the guidance service, throws some light on the effect of the guidance activities.

The third major section in the investigation involved following a group of pupils through the junior high school, administering at the opening of the seventh grade an extensive body of tests and inventories, developing a program of guidance in terms of the recognized objectives of guidance, and measuring the pupils at the close of the junior high school period. This section of the program has been carried forward in two California cities and in an eastern city. The tests given to the high ninth grade pupils are now being given in the five schools participating in the project. The statistical work of the first section has been completed and there remains the statistical analysis of the third section of the investigation.

In connection with the investigation it has been necessary to construct tests and inventories where tests have previously not been developed. Six of the tests and two of the inventories have recently been published by the World Book Company.

Mental Hygiene.—The April issue of *Understanding the Child* is the first published by The National Committee for Mental Hygiene. This magazine was published from 1931 through 1935 by the Massachusetts Society for Mental Hygiene and enjoyed a wide distribution among teachers and others interested in the problems of childhood throughout the United States. Its reappearance is under a new editorial board, representing both The National Committee for Mental Hygiene and the Canadian National Committee for Mental Hygiene. It will be the policy of the journal, as in the past, to publish articles dealing with the practical aspects of the mental health problems of childhood, particularly from the standpoint of the classroom teacher.

University Research Project.—The sixty universities coöperating with the Office of Education by conducting coördinated research studies under the Project in Research in Universities have submitted most of their final reports. Findings from the forty major studies which have been conducted in from one to thirty-one institutions each will make a significant and in some cases unparalleled contribution to educational records. Twenty-three Office of Education staff members who are serving as coördinators for the various studies have been engaged in bringing together the findings from the different institutions and in preparing manuscripts for publication as Office of Education bulletins.

Important educational problems have been attacked on a scale never before attempted and with facilities and opportunities which are not frequently available to research workers in education. For example, a study of the occupational status of 75,000 alumni of thirty-one universities located in all sections of the country is rapidly nearing completion. Again, the 1931-32 freshman entrants to twenty-five institutions have been followed through their university careers in a study of persistence in attendance, scholastic success, and other important aspects of college life. An integrated attack on the problem of the relationship between certain factors in secondary school success and college success has been made in seventeen universities. Other representative studies have dealt with the economic status of rural teachers, the apportionment of State school taxes and funds, unit costs of higher education, and various aspects of CCC Camp education.

A second important outcome is that local findings from many of the studies are being used as a basis for administrative adjustments and revisions of instructional practice in the institutions where the data were gathered. This is shown by the nature of comments received from local project administrators of many of the participating universities. The coördinated studies to be issued later as Office of Education bulletins will significantly increase the usefulness of local findings.

In the third place, and highly significant, employment has been furnished for several hundred research and other white-collar workers who would otherwise have been unemployed, and their talents have been directed into worthwhile channels instead of representing an unutilized social resource.

Handbook for Teachers in England.—The Stationery Office has published a new edition of one of its best sellers, a 600 page *Handbook of Suggestions* for teachers and others concerned in the work of the Public Elementary Schools, by the Board of Education. The last edition was issued in 1927, and by the end of 1936 about 168,000 copies had been sold—a considerable number for an official publication. There is a large and constant demand for this book from the Dominions and the United States, and it also sells well in foreign countries.

The handbook attempts to present a coherent statement of the principles underlying the work of the schools and to bring together in one volume, to which reference can easily be made, the means and methods of teaching which practical experience has shown to be most successful. According to the Board of Education, the most noticeable difference between the new edition and preceding editions is that the child as an individual occupies a much more prominent place. The teaching and the subjects of instruction must be flexible and varied enough to meet the needs of the child at each

stage of his development and must also take account throughout of the differences in the ability and the interests of individual children. The object of education should be to fit the child to take his place in a world made vastly more complex in the last ten years by great changes in industrial structure, by improved transportation, and by the growing use of labor saving devices. The schools must now train children for life and leisure as well as for work. The order in which the subjects are now arranged in the Handbook is in part a recognition of this responsibility. Health and physical education come first and practical subjects, such as art and craft, housecraft, music, and gardening are given a prominent place. The environment of the child is of great importance to his satisfactory development and he is now encouraged to take a keen interest in the world about him.

Testing in Texas.—As was the case the year before, the report of the 1936 testing program of the Texas Commission on Coördination in Education is in two bulletins. One deals with results at the college level and the other with results in the seventh and tenth grades. The Commission is now in its second year of activity with an attempted state-wide testing program.

H. T. Manuel, Director of Research, states that, although accomplishments have fallen short of ideals, real progress has been made. Operating in a new field and with only meager subsidization, the Commission has held aloft the banner of individualization and guidance, has directed a coöperative program of some magnitude, has issued four substantial bulletins, and, incidentally, has paid all of its expenses. The Commission has been able to achieve these results because of the large contributions of service which it has received. Not a member of the Commission has been paid for his service. Even assistants in the office of the Director of Research have been only part-time employees. The Commission greatly needs a much larger subsidy to enable it to extend its service and to do its work without unduly burdening anyone.

Notwithstanding evidences of progress, there are moments of doubt and discouragement. It is difficult to be patient when progress seems slow. Administrators and teachers generally do not realize the fundamental importance of individualization and guidance in education. Why, for example, should only 36 out of 72 Texas institutions participate in the testing program of the Commission? Is it not a timely suggestion respectfully to remind the 72 sponsoring institutions that this program is their program, not that of the individuals who have been assigned the task of carrying it forward? If individualization and guidance have at all the importance ascribed to them by the American Council on Education and others, clearly administrators and teachers in greater numbers should be deeply concerned.

Vocational Education Project for Negroes.—This is one of the five special educational projects which the Office of Education has been conducting with the assistance of emergency funds. Vocational education information about Negroes has been received in the Office of Education from 33 States and the District of Columbia as a result of the National Survey of Vocational Education and Guidance. Findings from the survey should make significant contributions to the educational and occupational life of Negroes throughout the country. It is the first nation-wide study along this line and will furnish information that has long been desired by school officials and teachers in revising their programs and courses.

The following examples indicate how the results of the survey may be of value: (1) The study of facilities and opportunities for vocational education will be helpful in determining the present status of this important phase of the education of Negroes. (2) Studies of 2,000 evening school students and of 20,000 graduates and drop-outs of high schools will give some indication of the relation between schooling and subsequent experience. (3) Trends in enrollment in certain vocational courses and the extent to which States utilize Federal funds in providing vocational education for Negroes are revealed in a special study of this subject. (4) A personnel study of 27,000 Negro high school pupils will have important implications for vocational education and guidance programs. Follow-up plans are contemplated which will assist communities and schools in applying findings of the survey to their local needs.

New Zealand Research.—The second annual report, 1936, of the New Zealand Council for Educational Research states that thirty-six applications for research grants to be operative in 1936 were considered by the Council. Of these, 20 were approved, 6 held over, and 10 refused. Many of those approved represented the continuation of work begun in 1935. The value of the grants, excluding those for central office researches, varied from 10 to 82 pounds. At the Council Meeting in December, 1936, 13 applications for 1937 were received, 8 being granted, 2 held over, and 3 refused. Owing to its policy of confining itself to a limited sphere of topics, the Council has been regretfully compelled to refuse applications for researches which, though admirable in themselves, do not fit in with its general program. The chief areas in which the Council is interested include: educational and vocational guidance, organization and administration, rural education, educational experiments, and miscellaneous psychological studies.

Needed Research in Secondary Education.—The National Committee on Research in Secondary Education has compiled a mimeographed list of 997 problems and questions in secondary education suggested for investigation by representatives of 15 groups interested in this area. The problems are grouped under the headings of: philosophy of secondary education, secondary school population, organization of secondary education, influences controlling secondary education, secondary school staff, curriculum and method, community relationships, guidance, plant and equipment, administration and supervision, and historical and comparative. D. H. Eikenberry of Ohio State University was Chairman of the Committee in charge of the work. The booklet is obtainable from C. A. Jessen, Office of Education, Washington, D. C.

Educational Conference.—The Sixth Educational Conference has been sponsored this fall by the Committee on Measurement and Guidance of the American Council on Education, the Commission on the Relation of School and College of the Progressive Education Association, the Coöperative Test Service, and the Educational Records Bureau. The meetings were held at the Hotel Roosevelt in New York City on October 28 and 29.

Conference on Educational Broadcasting.—The Second National Conference on Educational Broadcasting will be held at the Drake Hotel in Chicago, November 29, 30, and December 1, 1937. The objectives, as formulated by a committee, are as follows:

1. To provide a national forum where

interests concerned with education by radio can come together to exchange ideas and experiences.

2. To examine and appraise the situation in American broadcasting as a background for the consideration of its present and future public service.

3. To examine and appraise the listeners' interest in programs that come under the general classification of public service broadcasting.

4. To examine the present and potential resources of education through radio.

5. To examine and appraise the interest of organized education in broadcasting.

6. To bring to a large and influential audience the findings that may become available from studies and researches in the general field of educational broadcasting, particularly such studies and researches as may be conducted by the Federal Radio Education Committee.

In addition to the eighteen organizations which sponsored the first Conference, the following have been selected to sponsor the second, to increase the scope of the social and cultural interests which will be represented on a nation-wide basis: American Association for the Advancement of Science, American Association of Museums, American Association of University Women, American Federation of Arts, American Library Association, American Public Health Association, Music Educators National Conference, National Council of Parent Education, National Federation of Music Clubs, and the National University Extension Association.

The topics of the four general sessions are: the American system of broadcasting, an evaluation of broadcasting from the point of view of the listener, educational broadcasting, and the future of radio. George F. Zook, President of the American Council on Education, will again act as Conference Chairman. C. S. Marsh, Vice-President of the Council, is the Executive Secretary, and his office at 744 Jackson Place, Washington, D. C., is the headquarters for preparations for the Conference.

Social Aspects of the Depression.—The Social Science Research Council announces the publication of a series of Research Monographs prepared under the direction of the Committee on Social Aspects of the Depression. The members of the committee are: William F. Ogburn, Chairman, University of Chicago; Shelby M. Harrison, Russell Sage Foundation; Malcolm M. Willey, University of Minnesota; and Director of Studies, Samuel A. Stouffer, University of Chicago.

The purpose of these volumes is to aid and stimulate research. Each author seeks to examine critically the literature on the impact of the depression in his field for the purpose of: (1) locating existing data and interpretations already well-established, (2) discovering serious inadequacies in information, and (3) formulating research problems feasible for study.

The monographs deal with the following topics in relation to the depression: crime, education, the family, internal migration, minority peoples, reading habits, recreation, religion, rural life, social aspects of consumption, social aspects of health, social aspects of relief policies, and social work. The monographs are obtainable at one dollar each (or ten dollars for the set of thirteen) from the Council, 230 Park Avenue, New York City.

The monograph on education, prepared by the Educational Policies Commission, deals with problems in the areas of: historical and comparative education, theory and philosophy, student personnel, program of instruction, staff personnel, organization and administration, finance

and business administration, and professional and scientific activities. Using the same headings, the Commission has prepared *A Bibliography on Education in the Depression*, which extends over a total of 118 pages and is obtainable at 50 cents from the N. E. A. at Washington.

Trends in Secondary Education.—Bulletin No. 2, 1937, of the U. S. Office of Education, by Carl A. Jessen, points out significant developments in secondary education under the headings of: increases in the secondary school population, providing for individual differences, the reorganization movement, provisions for continuing and supplementing high-school education, vocational education, small high schools, the curriculum, guidance, and a comprehensive service to all youth. Under the last heading are listed some of the special services recently established for the guidance of youth. Within the last two years efforts have been made to establish a number of services which involve the education of youth. Of this nature are the Civilian Conservation Corps and the National Youth Administration. Here also should be mentioned the committee on youth problems of the Office of Education, whose youth publications on community organization, leisure for living, education for those out of school, vocational guidance, finding jobs, and community surveys are now available. An ambitious enterprise is the series of studies now in progress under the direction of the American Youth Commission of the American Council on Education. The yearbook of the Department of Superintendence for 1938 will deal with the subject of youth. Other undertakings are the Coöperative Study of Secondary School Standards and the Tercentenary (1935) of the founding of secondary education in the U. S.

Health of the Negro in the United States.—The July, 1937, number of the *Journal of Negro Education* is Yearbook No. VI, entitled *The Health Status and Health Education of Negroes in the United States.* This comprehensive volume of 330 pages is divided into five parts concerned with health status, health facilities, health education, critical summary of the yearbook by Ray Lyman Wilbur of Stanford University, and a bibliography. Dr. Wilbur's closing statement is as follows:

"The problems of the Negro are not his alone. They belong to the whole population. There is no possibility of isolating either the Negro or his diseases. He makes just as adequate a human reservoir for such diseases as syphilis, tuberculosis, gonorrhea, malaria, typhoid, as those who have white skins. The disease organisms living in his body can perhaps more readily reach another Negro; but they soon can and do spread to all elements of the population. We are all human beings, we are all prey to these various enemies of mankind, we are susceptible from the standpoint of health to the results of lack of discipline and loose conduct. The use of alcohol facilitates greatly the spread of diseases and the breakdown of morals. Alcohol is taking an increasing toll out of the Negro. Its increasing use will effect detrimentally the infant mortality rate, the general mortality and morbidity rates, particularly in relation to syphilis, gonorrhea, and tuberculosis. We cannot separate what we call character from human relations to morbidity and mortality tables. Every human being makes decisions every day of consequence in the domain of health. Negro leaders must stress religion, morals, sound human conduct as a part—and a large part—of the health program.

"All in all, we can see throughout the tables and figures and facts presented in

this survey that the Negro is on his way up from the standpoint of health, and that his rate of progress can be determined to a considerable degree by the actual amount of expenditures of money and energy in the fields of health education and public health. The possibilities and some of the methods have been demonstrated. They call for inter-racial coöperation, tolerance of differences, and respect for personality and achievements.

"Recapitulating in rapid fashion, the major problems of health may be grouped as: the health hazards of pregnancy which are greatly increased by syphilis and gonorrhea; the health hazards of adolescence and young adulthood where tuberculosis and the respiratory diseases take heavy toll; the health hazards of the home and the community typified by lack of facilities needed for protection; and the health hazards of later years in which degenerative diseases are most prominent. In all but the last, the heart of the problem is the child and his needs, which must be the objective toward which we aim our endeavors for advancement."

Oakland Studies. — Recent research bulletins from the Oakland, California, schools deal with class size for the 1936-37 spring term in elementary, junior, and senior high schools, and with the results of high-sixth grade mental and reading tests for the fall semester of 1936. These studies, as well as the following bulletins, were prepared by Spencer D. Benbow and Robert B. Abbott:

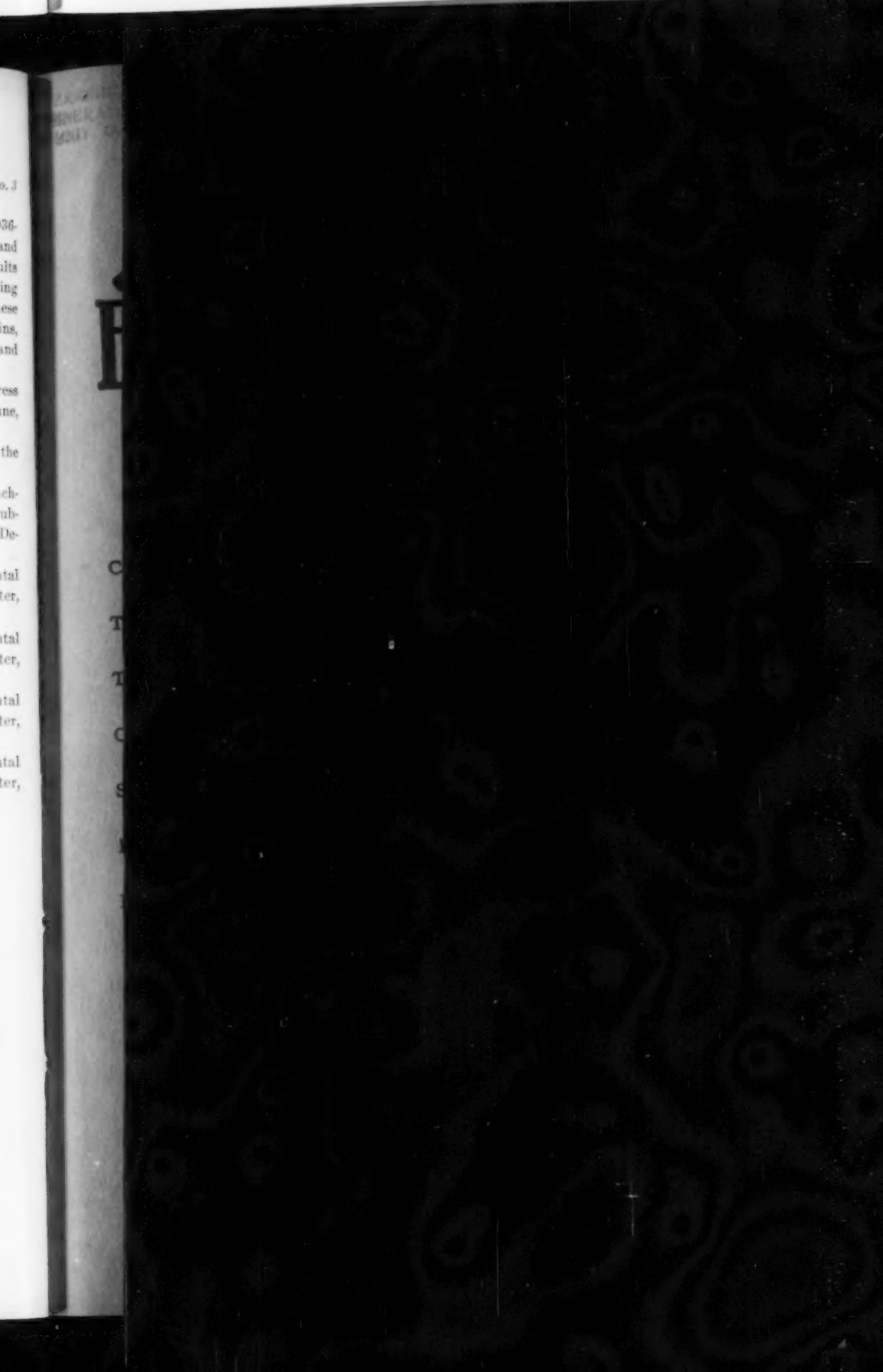
"Senior High School Term Progress Report for the Term Ending June, 1937."

"Low 10th Scholarship Report for the Term Ending June, 1937."

"Report on Professional Study of Teachers and Principals of the Oakland Public Schools for the Year Ending December 31, 1936."

"Results of Low-Second Grade Mental and Reading Tests, Spring Semester, 1937."

"Results of Low-Fourth Grade Mental and Reading Tests, Spring Semester, 1937."

"Results of High-Sixth Grade Mental and Reading Tests, Spring Semester, 1937."

"Results of High-Ninth Grade Mental and Reading Tests, Spring Semester, 1937."